AUGUST 1955

food processing

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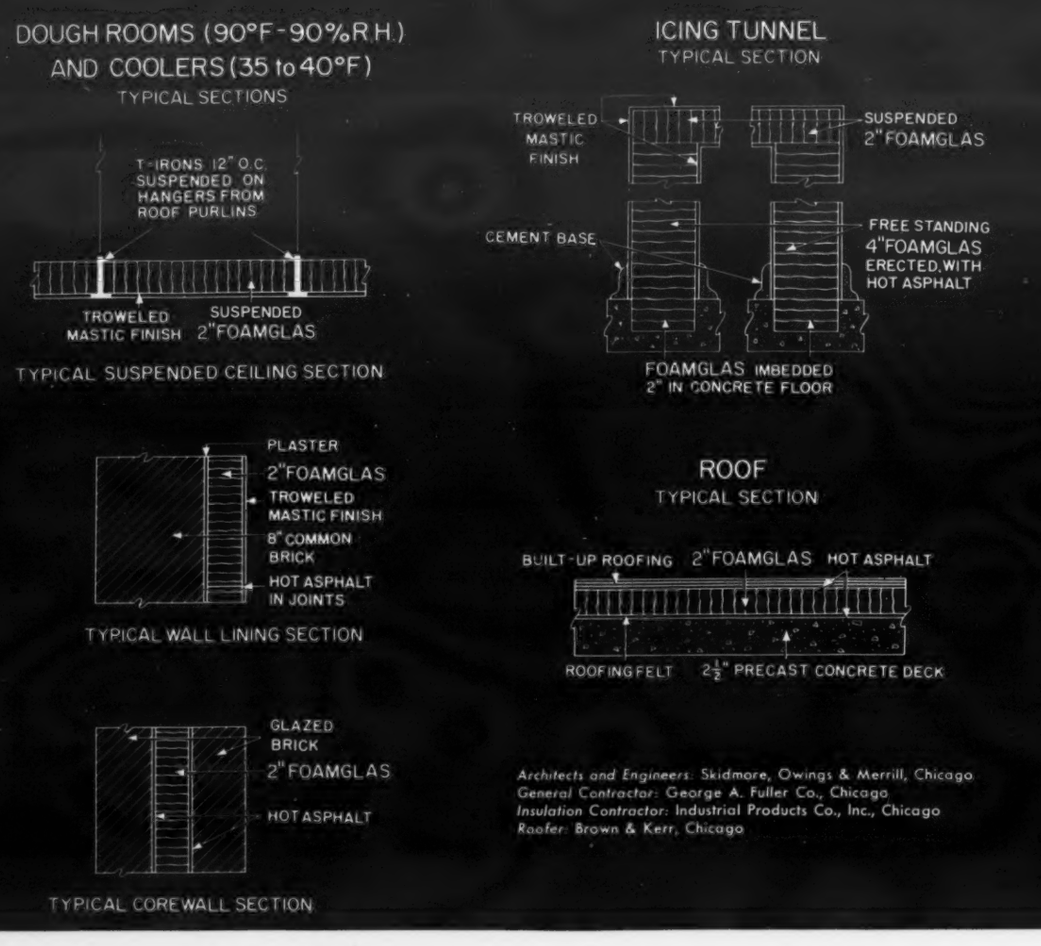
For Men who Manage

ACTION IN IRRADIATION

Progress is welling up . . . GE announces this bigger electron beam generator . . . QMC reports new phase of program pointed toward a commercial-size facility in 1958 . . . see page 20



Architects and Engineers: Skidmore, Owings & Merrill, Chicago
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Roofer: Brown & Kerr, Chicago

Only moisture-proof FOAMGLAS can effectively insulate all these for United Biscuit . . .

hot, humid dough rooms . . . coolers . . . icing tunnels . . . roof

K. F. MacLellan, president of United Biscuit Company, tells how they benefited from the unique properties of FOAMGLAS insulation at their Sawyer Division's big new plant in Melrose Park, Illinois:

"To insulate the walls of dough setting rooms kept at 90° F.—90% relative humidity *and* coolers kept at 35 to 40° F. we picked FOAMGLAS. It stays completely dry, fully efficient in both locations to help control temperature and humidity. Also it is inorganic and doesn't support vermin life . . . that's particularly important, of course, in all food plants.

"The extra rigidity of FOAMGLAS enabled us to suspend it between T-irons to form dropped ceilings. That's cutting our operating costs by reducing the volume of air to be heated or cooled. Its unusual strength enabled us to erect free-standing tunnels in which we harden freshly applied cake frostings. The elimination of structural supports reduced construction costs."

Mr. MacLellan concludes: "We also insulated the entire roof area with fireproof FOAMGLAS. No other insulation could have given us such effective results on such diverse, difficult applications."

Find out today how *you* can save by using FOAMGLAS. Write for your choice of booklets on insulation for buildings, cold storage spaces, piping or equipment.

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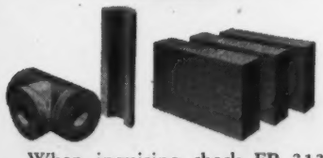
the cellular, stay-dry insulation



When inquiring check FP 3132 opposite last page

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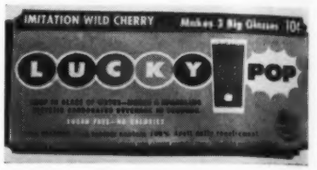
Make soda-pop at home!

Make your own soda pop as you want it! It's done by merely dropping a tablet in a glass and adding water. It fizzes into a sparkling beverage in seconds. Tablets are made in a choice of six flavors: root beer, wild cherry,



grape, cola, lemon-lime, and orange. These drinks are sugar-free, as sweetener used is Sucaryl. Package of three tablets sells for 10c. (Lucky Pop is sold through Real Gold Co., Dept. FP, Redlands, Calif.)

An idea from Milwaukee

A switchbox safety device incorporates a bracket which accommodates six padlocks. This permits each of half-a-dozen workers to "lock out" the box so that power cannot be turned on until all have finished their work. (Master Lock Co., Dept. FP, 2600 N. 32nd St., Milwaukee 45, Wis.)

Ice cream legislation

Ice cream producers are suggesting model state standards laws. The IAICM has now published these proposals to guide state groups in formulating legislation to protect ice cream consumers from deception and misrepresentation. Various products are defined and ingredient regulations suggested. (Flavor Newsletter—Food Materials Corp., Chicago 32, Ill.)

"We'll need every ounce"

"We'll need every ounce of milk we can produce in this country" said R. M. Hadrath, vice-chairman of the American Dry Milk Institute at the organization's annual meeting. He predicted that population growth would solve dairy food surplus problem in two years.

(*Continued on page 77*)

food processing

(FOOD PROCESSING PREVIEW)

For Men who Manage

Published in Chicago

FOOD CAPITAL OF THE WORLD

Vol. 16 **AUGUST, 1955** No. 8

OVER 30,000 CIRCULATION IN FOOD PROCESSING PLANTS

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DOW

When inquiring check FP 3133 opposite last page

food processing

• Volume 16, No. 8 • August 1955

Over the editor's shoulder

Talk or action?

Perhaps you're like me, always joining the chorus when in a group that's griping about taxes, government waste, and inefficiency. Vociferous as I've been on such occasions, I must confess that words have not been followed by action.

Reports coming from the Hoover Commission, however, should impel any citizen to write his congressman and senators, urging immediate consideration of the recommendations that have been made. Tardily, I've done so, but soon enough to get under the wire before Congress adjourns. If you haven't done likewise, there's still time to get yourself on record.

Perhaps, before you write, you'd like to review some of the significant aspects of the objectives of the Commission and what it has accomplished. Because the issues involved are so important, the Editors of FOOD PROCESSING have prepared a special editorial on this very subject. It's on page 5.

Joseph L. White
ASSOCIATE EDITOR

SPECIAL SERVICE FOR READERS

1. When you want more information, see Reader Service slip opposite page 96

2. If you are looking for information on specific products, use the handy Product Directory . . . lists everything in this issue with page reference, see page 93

3. If you want to subscribe to this magazine, see reader-qualification form opposite page 97

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A Special FOOD PROCESSING Editorial

Extreme importance of the work of the Hoover Commission and the benefits that will result from adoption of its recommendations have prompted the Editors to prepare this commentary

balanced budget... tax cut IF Hoover Commission recommendations are adopted

In sleuthing after government waste, extravagance and duplication of effort, the Hoover Commission has found plenty of each. In completing its two-year exploration of government organization and policies it has done an admirable job.

It has made highly practical recommendations that will achieve desired efficiency and economy. But Mr. Hoover, himself, admits that he does not know if the proposals will be adopted.

Do you want the tax cuts that the commission's program can achieve? Check the tabulation shown below. Think what these savings can mean to those who pay taxes.

Remember, however, that there is no assurance that Congress will take necessary action unless it gets a mandate from the voters. So write your congressman and senators — *now*.

It seems apparent that, without adoption of the Commission's recommendations, practices that are costing us so dearly will not be changed.

A few statements from the Commission seem

(*Continued on next page*)

Savings Estimated by Hoover Group

Budget and accounting	$4,000,000,000
Depot utilization	253,000,000
Federal medical services	290,000,000
Lending, guaranteeing, and insurance activities	200,000,000
Overseas economic activities	360,000,000
Paper work management	288,300,000
Personnel and civil service	48,500,000
Real property management	185,000,000
Defense—personnel problems	388,800,000
Subsistence (food-clothing)	400,000,000
Transportation	151,000,000
Use and disposal of federal property	*2,000,000,000

*For the first four years: thereafter $1,000,000,000 a year.

Herbert Hoover cautioned that these could not be added to obtain total savings because there was considerable "overlapping."

Stearns process-matched magnetic drums remove tramp iron automatically

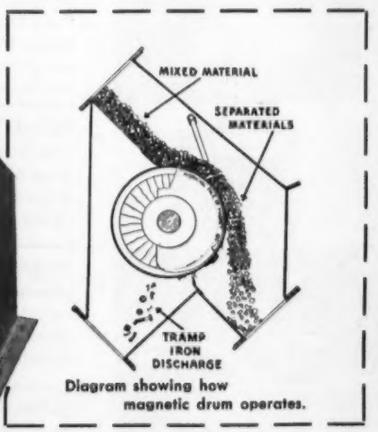

Diagram showing how magnetic drum operates.

Stearns LP magnetic separator. Stearns builds various models of drums in a wide selection of sizes — standard or custom-made to specifications.

You get continuous, automatic tramp iron removal from food in process with a Stearns drum-type magnetic spout separator. Tramp iron is pulled out of material in process and dropped into discharge chute — purified product falls into separate chute. No levers — no cleaning — no time-wasting interruptions. Deep, powerful magnetic field of Stearns electro or Alnico V permanent magnets insure positive tramp iron separation — even from large amounts of fast-flowing material.

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Stearns Magnetic engineers study every aspect of your installation — then recommend a unit tailored specifically to your plant and product. Factors such as feed location, control and discharge positioning, type of material, speed and angle of flow, and space limitations are all carefully reviewed. That is why Stearns can provide a magnetic installation that will give you maximum protection.

By safeguarding against explosion, equipment damage and product contamination with Stearns magnets, users have effected reductions in insurance rates. Write for Bulletins 93E and 93EA.

1114

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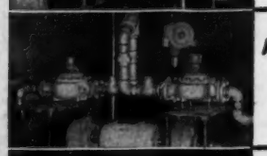
Here's a check-list of savings made every day with accurate metered measurement of more than 150 industrial liquids. Chances are you can use at least five of these ideas in your plant:

√ **AUTOMATIC BATCH MIXING:** Meter liquids directly to tanks or kettles with Neptune Auto-Stops. Push buttons to set quantity . . . meter cuts off accurately, automatically. No waiting for weigh tanks to fill, no "inching" up to gauge marks, no wrestling with bags or buckets.

√ **AUTOMATIC PROCESS CYCLING:** Auto-Stop meters can be equipped with electrical switches to start or stop pumps, agitators, etc. . . . automatically. Saves times, labor, power . . . with closer control.

√ **ELIMINATE REJECTED BATCHES:** In one leading pharmaceutical plant, Neptune meters eliminated human errors, saved enough costly ingredients to pay for the meters in less than a month! How's your "reject" rate?



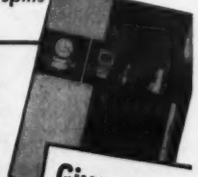
√ **EASIER INVENTORY, COST CONTROL:** Neptune Meters at key check points keep track of inventory, interdepartmental use, production rates, etc. They put a stop to waste, verify full measure received or delivered.

√ **AUTOMATIC DRUM FILLING:** This Neptune fills drums, radiators, fuel tanks, etc., with exact quantity every time you press the handle. Saves time, labor, prevents spills or "shorts."

√ **OIL BURNERS, DIESELS:** Use these low-flow meters instead of bulky day tanks to measure fuel consumed by boilers, melting furnaces, diesels, etc.

√ **WATER CONDITIONERS:** Trident meter's wary eye tells when ion exchange unit needs recycling. See if yours has trouble-free Trident.

√ **TANK TRUCK DELIVERIES:** Many industrial liquids can be delivered by metered trucks with greater ease and accuracy than markers, gauges or sticks. Investigate Red Seal meters.



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special editorial

You are urged to write your congressman and senators at once. Do not, in effect, approve inefficiency in government by failing to make your thinking known to your elected representatives

(Continued from preceding page)

pertinent here: "There is a tendency to create activities which could be undertaken by private agencies." Government lending agencies were criticized because of their tendency to expand their functions beyond their original scope and continue to operate rather than "being liquidated". The Commission also complained that "where easy money is obtainable from the government, financial integrity tends to deteriorate, and windfalls and corruption frequently flourish".

Now, let us cite just a few examples of the extent to which government bureaus and departments become overgrown. There are 104 agencies engaged in the lending, guaranteeing, and insuring business. They employ 40,000 persons and represent a government investment of $16.9 billion with authority to call on the treasury for 14.1 billion more.

When it comes to paperwork, we find that the Federal Government creates and handles some 25 billion pieces of paper each year, exclusive of tons of paper used for printing technical manuals, periodicals, and the like. This requires the services of some 750,000 full-time employes, and an expenditure of more than 4 billion dollars annually, *a sum about equal to the whole Federal budget prior to 22 years ago.* There are 25,000 employes engaged alone in sorting mail for Federal offices. The Federal Government turns out over a billion individual letters each year.

There is probably no need to enumerate some of the specific examples of inefficiency cited by the Commission. You've read about many of them in the public press. But we might point out one, concerning food, as very striking.

Some Examples

In 1951, the Army shipped from California to New York, 870,000 lb of tomatoes. During the same period, the Navy shipped 775,000 lb from the East Coast to California. From a Department of Defense standpoint, the net effect was tantamount to the armed services routing 20 carloads of tomatoes from Sacramento to San Francisco via New York.

But, in addition to many reforms in departmental operations, the Commission calls for drastic changes in such fields as public power, federal loans, and rural electrification. Also, the Commission questions provision by government of goods, services, and transport that might be provided by private enterprise or private investment.

The Commission also states that it is impossible to estimate the savings which would result from reduc-

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- **refinery still through-put increased from 1500 to 2500 barrels per day**
- **yield of textile vat dyes increased by 100%**

And you get increased production immediately without installing expensive new equipment. All you have to do in the case of most foamers is add a few parts per million of the water dilutable Antifoam AF Emulsion or, where solvents can be tolerated, a dispersion of Antifoam A. Both of these Dow Corning silicone defoamers are physiologically harmless. Both of them **increase production • reduce processing time • eliminate the waste and fire hazard of boil-overs.**

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ing competition between commercial-type government projects and private enterprises.

As for the breadth of the Commission's approach to the problem as they relate to the country as a whole, Mr. Hoover pointed out that the Commission was not only concerned with government finances but constantly sought to promote the following objectives:

1. To preserve the full security of the nation in a disturbed world.
2. To maintain the functioning of all necessary agencies which make for the common welfare.
3. To stimulate the fundamental research upon which national security and progress are based.
4. To improve the efficiency and eliminate waste in executive agencies.
5. To eliminate or reduce government competition with private enterprise.
6. And perhaps the most important of all: To strengthen the economic, social, and governmental structures which have brought us, now for 166 years, constant blessings and progress.

During the course of its work the Commission and its task forces inquired into 17 government functional activities. It studied 60 of the 64 executive agencies. These 60 agencies spend 95% of the total funds appropriated to the executive branch of the government annually.

The Hoover Commission emphasized that the savings recommended do not involve any reduction in military strength, any item of useful public works or any delivered federal contribution to health, education, and welfare. The commission confined its economy recommendations to the elimination of waste and the promotion of efficiency.

Convention and Exhibit

Schedule 1955

Aug. 15-19. American Society of Agronomy and Soil Science, University of California, Davis, Calif.

Aug. 22-23. Symposium on Electronics in Automatic Production, Stanford Research Institute, Sheraton-Palace Hotel, San Francisco, Calif.

Aug. 29-31. American Soybean Assn., Annual Convention, Netherland-Plaza Hotel, Cincinnati, Ohio.

Sept. 5-9. American Society for Horticultural Science, Michigan State College, East Lansing, Mich.

Sept. 11-14. National American Wholesale Grocers' Assn., Mid-year Meeting, Broadmoor Hotel, Colorado Springs, Colo.

Sept. 20-22. National Packaging and Materials Handling Show, Kingsbridge Armory, New York, N. Y.

Oct. 1-6. Baking Industry Exposition, Convention Hall, Atlantic City, N. J.

Oct. 1-6. Bakery Equipment Manufacturers' Assn., Convention Hall, Atlantic City, N. J.

Oct. 9-12. Produce Packaging Exposition and Conference, Conrad Hilton Hotel, Chicago, Ill.

Oct. 10-12. Truck Body and Equipment Assn., Morrison Hotel, Chicago, Ill.

THINGS TO COME...WITH Glycerine

TASTY CREAM CANDIES . . . with longer shelf life

Candy makers have a problem when cream fillings develop disagreeable taste and odor after a few weeks on store shelves.

They've looked long and hard for a way to eliminate this spoilage which is caused by the formation of free fatty acids.

Researchers have tried to stop or slow down the reaction by adding chemical retardants. But taste and texture could not be sacrificed.

Tests have shown that in some cases addition of 1-2% *Glycerine* almost doubles shelf life, promising a more trouble-free future for the candy industry.

The unique balance of properties that won such wide acceptance for Glycerine in the candy industry in the past continues to open new doors to progress. In paints, foods, pharmaceuticals, packaging . . . for tomorrow's surge of new specialties . . . in formulations and reactions yet unknown. *Nothing takes the place of Glycerine.*

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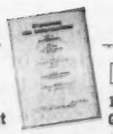
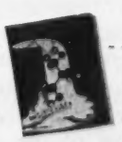


☐ 12-page booklet on Glycerine standards and specifications



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Milwaukee, Wis.: Seamless Welding Fittings

TA-5037(P)

When inquiring check FP 3138 opposite last page

Food Regulations

News and Interpretations

FDA • Congress • Identity Standards
Meat Inspection • Court Decisions
USDA Grade Standards • State Legislatures

Expand FDA four-fold, citizens committee urges

The hard-hitting report on the enforcement of Food and Drug Administration regulations by a 14-member citizens committee named only last February has aroused considerable comment and expectation in leading food circles in Washington. Unlike many of the reports by "private citizens" emanating from Washington — some of which took as much as two years of "study" and expense — the aim of the report is clear: a vastly expanded FDA in personnel, facilities, and enforcement. At press time, there had been no critical public statements by dissenting members. Secretary Hobby in releasing the report said that such a survey "was long overdue". On the operational level, FDA officials are privately pleased.

Underlying the committee's recommendations is its belief that inadequate enforcement of the present scope and complexity of food, drug, and cosmetic laws are a threat to the health and welfare of industry, as well as the general welfare of the public. For purposes of meeting such a threat, the committee also feels that the present resources of FDA "are woefully inadequate".

For correction of this deficiency, the lengthy report outlines four main areas for strengthening the agency. The main proposal calls for expansion in personnel and facilities as much as four-fold within the next 10 years. Increased funds for this purpose should be authorized as fast as the agency can make the necessary changes.

The opinion of the committee is that FDA should get 10 to 20% increase in its next budget to make a start on such a program. Appropriation for a separate building is also proposed. In Washington, political veterans say the report is what the agency needs to arouse new interest in Congress for a vastly streamlined FDA.

For the food processing industry, recent technological growth in food production, the increased use of chemical additives, all affecting the 30 million population growth since 1941, are among the factors cited as contributing to the more than strong recommendations of the committee. Despite this, the report says, FDA has fewer enforcement employes per individual now than it did 14 years ago.

Next, FDA should go in for more educational and informational activities to see that industry, interested professions, and the public get a better understanding

of the purposes and requirements of the food and drug laws.

Thirdly, the committee commented critically that FDA's backlog of legal actions should be reduced. Adequate appropriations and staff for the general counsel's office were recommended for vigorous prosecution of cases once they have been started.

Lastly, a strengthening of the agency's headquarters staff is recommended. This would include a gradual increase in the number of field inspectors, laboratory staff, and the delegation of greater authority to district offices.

The committee took note of charges made from time to time that FDA is "overtechnical", "too stringent", or "even unrealistic" in its approach to enforcement. It added, however, that while "these charges may have been true in a few isolated cases, in the area of prevention of food poisoning, FDA stands on firm ground and the errors made have been in human zealousness for a humane cause".

USDA slowed down on program to pay less for wheat with inferior baking qualities

Some USDA wheat men, as well as USDA price support administrators, are leery of the wheat classification penalty plan announced by Agriculture Secretary Benson — after farmers voted for marketing quotas in return for high price supports. Its purpose would be to produce wheat of a higher quality for bread baking.

Under the program, which Benson said he would "undertake to place in effect upon the 1956 wheat crop", full price support would not be paid for wheat varieties rated less suitable for better bread-baking. These varieties have not yet been designated. The idea is this would discourage production of such varieties.

Pressures are already forcing the Secretary to slow up on this one. Political charges have cropped up that he is trying to "change rules in the middle of the game", that is, pay farmers less than the $1.81 national average level of support they voted for. Benson now says he will "go slow" in making any changes. He will discuss next moves with Congress and farm groups for approval of the plan.

Benson says the Department, after much testing, now has a method — which can be used at the wheat field — for determining what wheat has good bread flour possibilities. This would be necessary since after storage a particular farmer's wheat cannot be identified.

But regardless of political and technological obstacles, dissenters predict that the plan would still produce very little improvement in the 1956 crop for bread flour milling purposes, since only fringe changes would be attempted. The earliest a full-scale wheat

(*Continued on next page*)

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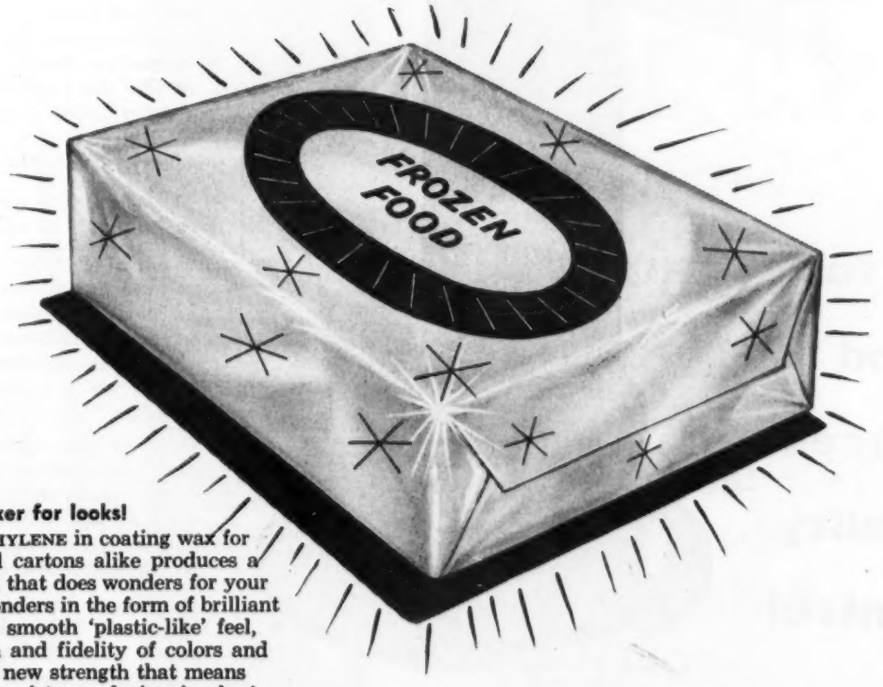

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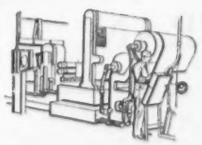

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(*Continued from preceding page*)

classification plan would be attempted now is on the 1957 crop. And that would have to be announced in 1956 — a big political campaign year.

Even then, some Government wheat men say there is no way the farmer can insure a crop of superior wheat. They point to past years in which there was an over-supply of the "superior" wheat in terms of demand and the "inferior" varieties were at a premium. There is also a feeling among experts here that, except for present grade standards, the quality aspect of American wheat can be overplayed. Some of them point out that practically all wheat can be milled and used for baking purposes. The whole issue could arouse ill-feeling by producers toward the milling industry, some predict.

Millers, farm groups support segregation of inferior varieties

An official of Millers National Federation in Chicago indicated that the above statements confuse normal gradations in quality — which exist from year to year and from place to place, regardless of variety — with the basic deficiency of certain varieties of wheat, some of which, he says "will never make good flour for baking".

There are some varieties which, to his knowledge, have "never commanded a premium", even when the market was in short supply of the general type in which the wheats are classified — for instance, Chiefkan (an inferior variety winter wheat), or Rex (an inferior soft white wheat).

Inclusion of some of these wheats in flour used for baking, the Millers Federation spokesman said, adversely affects the behavior of the dough in the bakery, even when present in amounts of 5 to 10% of total flour used.

Millers subscribe to the present theory of attempting to segregate inferior varieties — but there are practical obstacles which must be overcome. "It's a complicated picture," he agreed.

The American Farm Bureau Federation is one of the groups spearheading this movement, he said, along with such farm groups as the Kansas Wheat Improvement Association and others.

FTC moves again to crack down on butter-margarine advertising

Federal Trade Commission is continuing its crackdown on advertisements for oleomargarine that suggest it is a dairy product. In its newest action, the Commission has charged The Best Foods, Inc., New York City, with "suggesting in advertising that 'Nucoa' margarine is a dairy product".

The Commission alleges that in advertising Nucoa, the company used statements such as "is rich as sweet skim milk", and "it's richer in milk minerals

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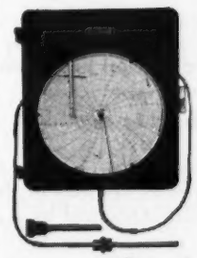

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than the most expensive spread". This implies that Nucoa is richer "than a principal dairy product, namely butter", the FTC complaint charges.

These and other statements, the Commission charges, violate Sec. 15(a) (2) of the FTC Act which prohibits action "made or suggested by statement, word, grade designation, design, device, symbol, sound, or any combination" that margarine is a dairy product. A hearing has been scheduled for September 7, New York City, before an FTC hearing examiner.

Salmon groups charged with price fixing

FTC also took action during the month against fisherman, processors, and shippers charging they conspired to fix prices in the Puget Sound salmon industry. Respondents of the complaint are Puget Sound Salmon Canners, Inc., Seattle, Washington, an association of canners and packers; Purse Seine Vessel Owners Association, Tacoma, Washington, and fishermen members of the International Longshoremen & Warehousemen Union, Seattle.

USDA Grade Standards

Checklist of new or proposed grade standards issued by USDA follows. Except where noted, complete texts can be secured from USDA, Fruit and Vegetable Branch, Processed Division, Washington 25, D. C.

Raisins: Changes announced in earlier proposed revision of standards to accommodate "informal comments" from industry on the inclusion of additional requirements for Layer (or Cluster) pack of Muscat raisins. The addition to original proposal upped final date for filing of exceptions from June 25 to July 29. Proposed requirements for cluster Muscat pack are similar to those proposed for Grade A and Grade B Muscat raisins, except for stems and capstems, size, and moisture.

Dried currants: Proposed revision of grade standards for dried currants which have been in effect since October, 1952. Changes are similar to those announced for the proposed revision of processed raisins. Would decrease the allowances for pieces of stems from 2 pieces per 16 ounces in Grade A (or Fancy) to 1 piece per 24 ounces, and from 3 pieces per 16 ounces to 1 per 16 ounces in Grade B (or Choice). The proposal also separates requirements as to moldy currants from other defects such as damage by fermentation and grit, sand, or silt. Deadline for filing exceptions was July 29, 1955.

Apple butter: Final standards, to be announced after the July 8 deadline for comments on proposals, are still "some time off", as officials put it. Government changes proposed would adjust the color requirements for each grade and provide for standard methods of examining the product for defects.

Canned asparagus: Biggest change of all in plans is postponement of complete revisions of standards until "next year". Reason for the long postponement of grades proposed last January: Officials are forced to go over comments and exceptions brought to their attention which resulted in the original extension of the deadline for comments until June 30. As originally proposed (minus

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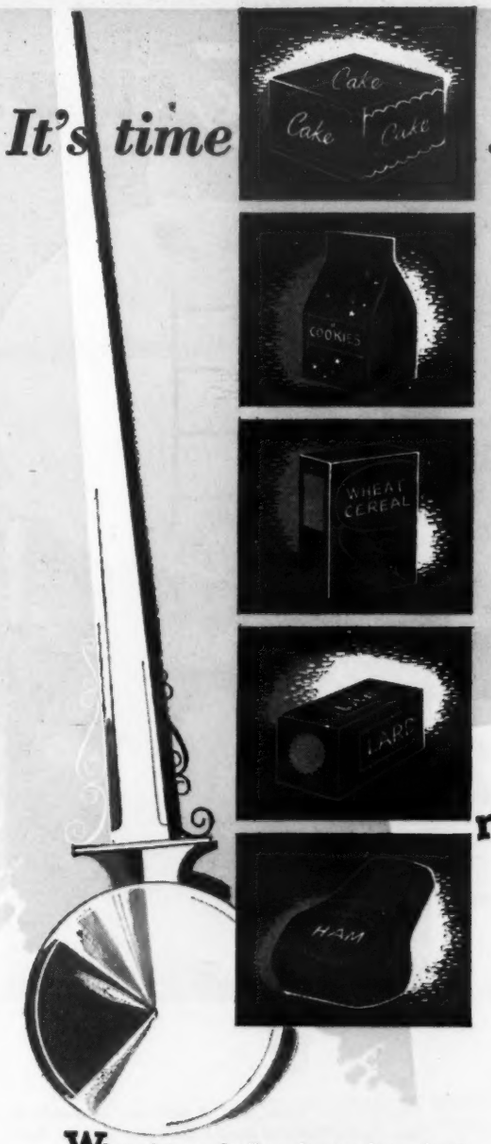

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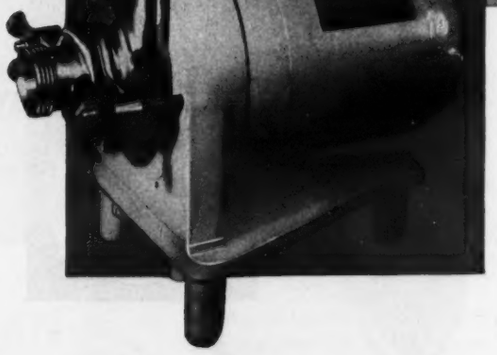

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P155

When inquiring check FP 3143 opposite last page

food regulations

(*Continued from preceding page*)

coming changes due to exceptions filed), the changes involve allotment of 20 points for color, 30 for defects, and 50 for character.

Frozen lima beans: Amendment became effective July 15. Revisions provide for the use of USDA color standards and clarifies the definition of harmless extraneous vegetable material. No previous notice of the amendment was given because the changes won't affect packing practices, USDA says.

Tangerine juice for manufacturing: First US standards for grades for manufacturing in response to requests by processors. Proposals apply to concentrated tangerine juice preserved by any approved commercial method. Grades provided are A and C. Before applying the standards, product is reconstituted to a Brix of between 10.6 and 11.6 degrees. The Brix-acid ratio requirement for Grade A is not less than 9 to 1 nor more than 18 to 1, and for Grade C not less than 9 to 1 nor more than 21 to 1. August 29 is the deadline for filing of exceptions.

USDA Inspection Changes

Department announced it has found it necessary to increase certain inspection fees. These include higher charges for the inspection of poultry, Federal meat grading services, and the inspection of processed fruits and vegetables to cover increased costs. The services and increases are:

Poultry inspection: Present charges about 4% below the new charges, will be increased to $132 from the present charge of $127 per week per inspector of dressed poultry. The prevailing charge of $107.31 for inspection of canning and processing will be raised to $112 per week. Effective date was July 31. Another change: After August 1, plants will be billed for a month's services on an estimated basis and adjustments made on the following month's bill.

Federal meat grading service: Regulations governing the Federal meat grading service were amended to increase fees for grading services by $20.40 per week on a weekly contract basis, and from $3.60 to $4.20 on an hourly basis. The increases were to become effective this July 15. Officials said the larger fees were in order to cover increased costs resulting from high office rents and higher salaries for Federal employes.

Processed fruits and vegetables: Inspection and certification fees of processed fruits, and fruits and vegetables, were increased from a present minimum of $8 to $9 for lot inspections, and from $4.00 to $4.50 per hour on hourly base. Fee for additional quantities above specified minimums was increased slightly. Effective July 18.

FDA Standards

List of foods for which standards have been established is available from Food and Drug Administration, Washington 25, D.C.

Food standards where corn syrup is already included: A petition filed by Michael F. Markel, Washington, D.C. attorney for Samuel McCain, general counsel for Corn Products Refining Company, asks to include glucose syrup made from maize milo as an optional ingredient in specified food standards where corn syrup is now permitted. Too early for action yet.

Artificial sweeteners: National Research Council's Food

Protection Committee report, when it comes, won't be on the harmfulness or lack of it in Sucaryl as reported by Abbott Laboratories. Due late in August it will be a general report on artificial sweeteners — "on all cyclamates", an official said. First draft has already been written. The Abbott report is among others studied by the Food Protection Committee and will be so listed in the index of sources. But it will not be singled out for individual comment in the report itself, according to present plans.

FOOD INDUSTRY NEWS

New Plants
Companies
Personalities

Pillsbury Mills, Inc., celebrated the 25th anniversary of its Springfield, Ill. plant last month, and at the same time announced completion of a new half-million dollar warehouse. Plant employs 1500 workers and has a daily flour milling capacity of 16,500 cwt.

Fish sticks were being processed by about 45 companies last year. Total production came to more than 50 million lb. Per capita consumption of fish last year increased from 10.8 to 11.1 lb. These figures were recently pointed out by Harry A. Trimm, product manager of Birds Eye Fisheries products, in a talk before the National Fisheries Institute at New Orleans.

Appointment of William E. Preble as industrial engineer for the Fremont, Mich. plant has been announced by John Suerth, general manager, engineering and controls for Gerber Baby Foods. The post is newly created. Mr. Preble was with the DeSoto division of the Chrysler Corp. before joining Gerber Products Co.

H. J. Heinz Co. will construct a new 300 x 350' concrete building at Muscatine, Iowa replacing old buildings. New structure will house pickle, vinegar, and horseradish operations. E. R. Mayer, production manager, says crops from the surrounding area will be bought for fresh-pack pickles, a new Heinz product.

"An endless hot dog" was sent to the Lord Mayor of Frankfurt, Germany, Dr. Walter Kolb, by Tee-Pak, Inc., Chicago sausage casing manufacturer. It was flown to Frankfurt by Pan American World Airways. The hot dog was sent to "the birthplace of the frankfurter" to show the people of that city how Americans have "stretched" that invention, said E. E. Ellies, Tee-Pak vice-president in charge of sales.

Morris April Brothers, canners of Eatmor cranberry sauce, have opened a new warehouse at the company's plant, Tuckahoe, N. Y. The new building has 126,000 cu ft of storage space — accommodating 120,000 cases.

(*Continued on next page*)

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"Here it is," announces your Flo-Sweet Engineer — "the first compilation of liquid sugar facts and figures to be made available to the food industries!

"This new liquid sugar manual contains technical data amassed throughout years of research by Flo-Sweet technologists. Much of it has never been published before.

"Here are some of the important subjects this valuable reference work covers: history, production, and distribution of liquid sugar; liquid sugar systems; techniques of using liquid sugar in major food industries and dozens of pages of charts, graphs and tables covering every aspect of liquid sugar use."

You can arrange with your Flo-Sweet Engineer for your copy of "This Is Liquid Sugar" — or you can obtain the book direct from Refined Syrups & Sugars, Yonkers, N. Y. Price $5.00.

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FIRST IN LIQUID SUGAR

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NEW PFIZER CALCIUM CYCLAMATE THE NON-CALORIC SWEETENER

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That means *one out of five* people is a perfect prospect for your product sweetened with Pfizer Calcium Cyclamate. And it's no wonder the retailer is so eager to please these shoppers. They go from store to store with their shopping lists for those low calorie (but high profit) foods and drinks.

Pfizer Calcium Cyclamate is the *ideal sweetener* for your product. It's highly stable. Doesn't lose its sweetening effect in cooking, baking, canning or freezing. Doesn't impart bitter off-tastes or after-tastes. And it's compatible with *all* flavorings.

And Pfizer is your ideal source for technical help, with vast experience in food and beverage ingredients covering nearly a century of activity. Learn more about how you can put your product within reach of that "super-potential" shopper with new Pfizer Calcium Cyclamate. Contact Pfizer now.

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industry news

(*Continued from preceding page*)

Minneapolis-Honeywell Regulator Co., General Mills, and Northern States Power Co. have entered into a joint undertaking in the field of atomic energy. Their aim is "to evaluate and further nuclear developments of interest to the state of Minnesota and its industries". General Mills is also engaged in its own program of research on application of nuclear energy to the production and improvement of foods.

Thomas D. Richardson Co., Philadelphia, Pa. now has in operation a new 27,000 sq ft candy factory at Pontchatoula, La. The company produces after-dinner mints.

Carl C. Nigg, president, Bell Brand Foods, Ltd., Los Angeles, Calif. became president of the UCLA Alumni Assn. last month. He is also a director of Mission Dry Corp. and past president of the National Potato Chip Institute.

Warren L. Newcomer has been elected president of the Wilbur-Suchard Chocolate Co., Inc., Lititz, Pa. Walter H. Mann, who was president of the company for many years, has been elected chairman of the board. Mr. Newcomer joined the company in 1933, serving successively as controller and vice-president. He held the latter office from 1953 to the present time.

Dr. Rodney C. Welch was elected vice-president in charge of manufacturing. He has been plant superintendent since 1953.

Sydney N. Stokes has been named to the new post of assistant to the executive vice-president of van Ameringen-Haebler, Inc. Mr. Stokes was regional sales manager for Merck & Co., Inc. in New York and was associated with that organization in various executive capacities for twenty-one years.

Carnation Co. announces national distribution of its second "magic crystals" product—Instant Flavored Chocolate Drink. It dissolves instantly, even in ice-cold water. There is no need to add milk but it can be mixed with milk for extra richness. It is packed in 10-oz, pour-spout containers.

J. B. (Babe) Prevatt, Tavares, Fla. was re-elected last month to serve his fifth consecutive term as president and chairman of the board of the Florida Citrus Exchange and its selling and promotion subsidiary, Seald-Sweet Sales, Inc.

In his report to membership at the annual meeting, general manager John T. Lesley said that the organization hoped "to introduce a new and novel method of distribution designed to provide growers with higher returns and wider distribution of fruit".

Continental Baking Co. will soon begin construction on consolidated executive offices and research facilities on an 18-acre site in Rye and Harrison, 25 miles from New York City in Westchester county. Since 1936 Continental executive offices have been located at 630 Fifth Ave., New York. Research facilities, which are now in Jamaica and Bronx, N. Y., will be included in the new building. Engineering laboratory will remain in Fort Lee, N. J.

ASSOCIATION NEWS

Trade Associations
Technical Societies

Glass Container Mfrs. Institute will spend more than a million dollars during the coming year to advertise and promote the use of glass containers. Both TV and magazines will be used, announces R. L. Cheney, director of marketing.

New president of Processed Apples Institute, Inc., is John J. Tormey, Lyndonville Canning Co., Inc. The large attendance at the annual meeting was told by retiring president Yoder that, with this year's record pack of over 20 million cases, apple products may run second only to peaches in canned fruit production. Apple products moved from fourth in 1944 to third in 1953.

The Cider Vinegar Institute, organized as a national trade association in 1946, has been reorganized as the Vinegar Institute, 27 E. Monroe St., Chicago, Ill.

Dr. La Verne E. Clifcorn, recently appointed research associate, American Can Co., Barrington, Ill. has been elected the 1955-56 president of the Institute of Food Technologists. He received the gavel, symbolizing his new office, from Dr. Philip K. Bates, retiring IFT president, at the recent Columbus, Ohio meeting of IFT.

Vanilla Growers Assn. of Madagascar will sponsor the first nation-wide public relations campaign to be undertaken in behalf of this product. The program, to increase the use of pure vanilla extract in the home, is expected to win back some of the market the pure product has lost to synthetics in recent years. Co-sponsor is the Vanilla Bean Association of America.

A vanilla research program has been started under sponsorship of the Vanilla Bean Assn. and the Flavoring Extract Manufacturers Assn. It will be conducted at Boyce Thompson Institute of Plant Research, Yonkers, N. Y. Studies will investigate the flavor components of vanilla and seek to establish standards of identity for pure vanilla extract.

Coffee Brewing Institute, Inc., announces appointment of Dr. Ernest E. Lockhart as scientific director. Dr. Lockhart, member of the faculty of the Massachusetts Institute of Technology for the past ten years, has long been active in fields of food chemistry and flavor evaluation.

Dr. R. C. Sherwood, technical director of Sterwin Chemicals Inc., has been elected president for the 1955-56 term of the New York Section, Institute of Food Technologists. Dr. J. C. Bauerfeind, of Hoffman-LaRoche, was elected vice-president.

Woven Fabric Belting Mfrs. Assn., Inc. has been formed with headquarters at 27 William St., New York 5, N. Y. Among main objectives is standardization within industry.

The Convention and Exhibit Schedule will be found on page 7 of this issue

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More Oxidative Stability For More Foods At Low Cost . . . . . .

Compare the Performance of these Formulas with that of Any other Antioxidant

	"G-15" Shortening • Lard Fish • Chicken Peanut Oil • Olive and other Vegetable Oils • Citrus Fruit Flavors and Essential Oils	"G-16"
Highly effective in retarding oxidation for long period in low concentration	YES—Contains Propyl Gallate	YES—Contains Propyl Gallate
Excellent "carry-through" stability after exposure to high (baking) temperatures	YES—Contains BHT and BHA	YES—Contains BHT and BHA
Non-toxic	YES	YES
Imparts no flavor, odor, or color	YES	YES
Develops no flavor, odor, or color during its stabilizing life	YES	YES
Doesn't cause metal-reactive discoloration of product	YES—Contains Patented* Lecithin-Citrate	YES—Contains Monoglyceride-Citrate
Oil-soluble	YES	YES
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Reasonable in cost	YES	YES
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Grain sample is placed on tray, and photographic film in cover. X-rays are directed through sample from bottom

X-ray inspection 8 times faster

Quaker Oats checks grain with easy-to-use compact radiation unit . . . finds many other quality control applications

ROY BRADSHAW
Research Laboratories
Quaker Oats Co.
as reported by FP Staff

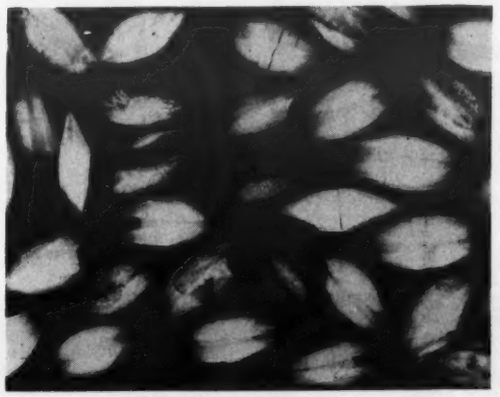
Problem: Conventional methods of checking incoming grain for insect infestation were felt by Quaker Oats Co. to be too involved and time-consuming. For example, the acid fuschin test employs a cumbersome procedure, and produces a high proportion of false positives. In addition, it is specific only for certain insects.

Another method, the cracking flotation technique, requires high skill to identify insect fragments, and takes relatively long periods of time. At Quaker Oats, only 8 to 12 50-gm samples could be completed per 8-hour day.

Solution: X-ray inspection units are now used in three of Quaker Oats' plants and in their Chicago laboratory. These compact units produce soft (low penetration) rays, which pass out of tube through beryllium window.

In using this machine a sample is placed on its tray, photographic film inserted in holder, cover closed, and x-ray exposure initiated. Average exposure is ½ to 1½ min. Film is developed—and becomes radiograph of sample. Latter is inspected for fragments. Image may be viewed on wet film within six minutes, but more detailed examination can be made after washing and drying film, which requires 20 to 30 minutes.

Results: Quaker Oats can now inspect 80 to 90 samples per day with this unit. No high skill is required—the average technician is well-qualified for the inspection. In addition, the radiograph provides a permanent record, a valuable



Close-up view of badly-infested wheat. Segmented bodies of weevil larvae can be seen within the kernels, although they are invisible to naked eye

Cashew nuts can also be examined with x-ray unit. Inspection reveals a number of worm tunnels (arrow) in this sample

Damage to corn kernels is easily spotted by x-ray. Average technician is well-qualified to perform this type of inspection

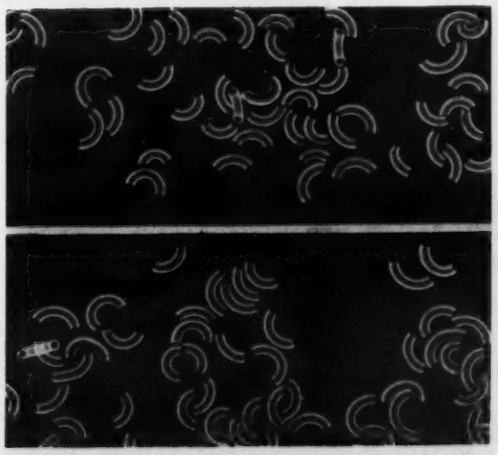
Rampant infestation of wheat by weevils shows up clearly on radiograph, which can be prepared (as wet film) in only six minutes

proof of quality in case of subsequent contamination. It is also more effective in demonstrating to suppliers the quality of their grain.

Other Uses: X-ray inspection also opens the door for further improvements in fumigation techniques, since live and dead larvae can be differentiated on the radiograph.

Quaker Oats has found x-ray inspection of value in other operations as well. End products, such as cakes and bread, can be studied to determine how variations in processing methods affect such factors as lumpiness. Air holes and checks in macaroni products are easily spotted on radiographs. And quality of grain throughout its processing can be maintained by x-ray inspection at every step along the way.

(X-ray inspection units are manufactured by X-Ray Division, General Electric Co., Dept. FP, 4855 Electric Ave., Milwaukee 1, Wis. . . . or check FP 3147 opposite last page.)

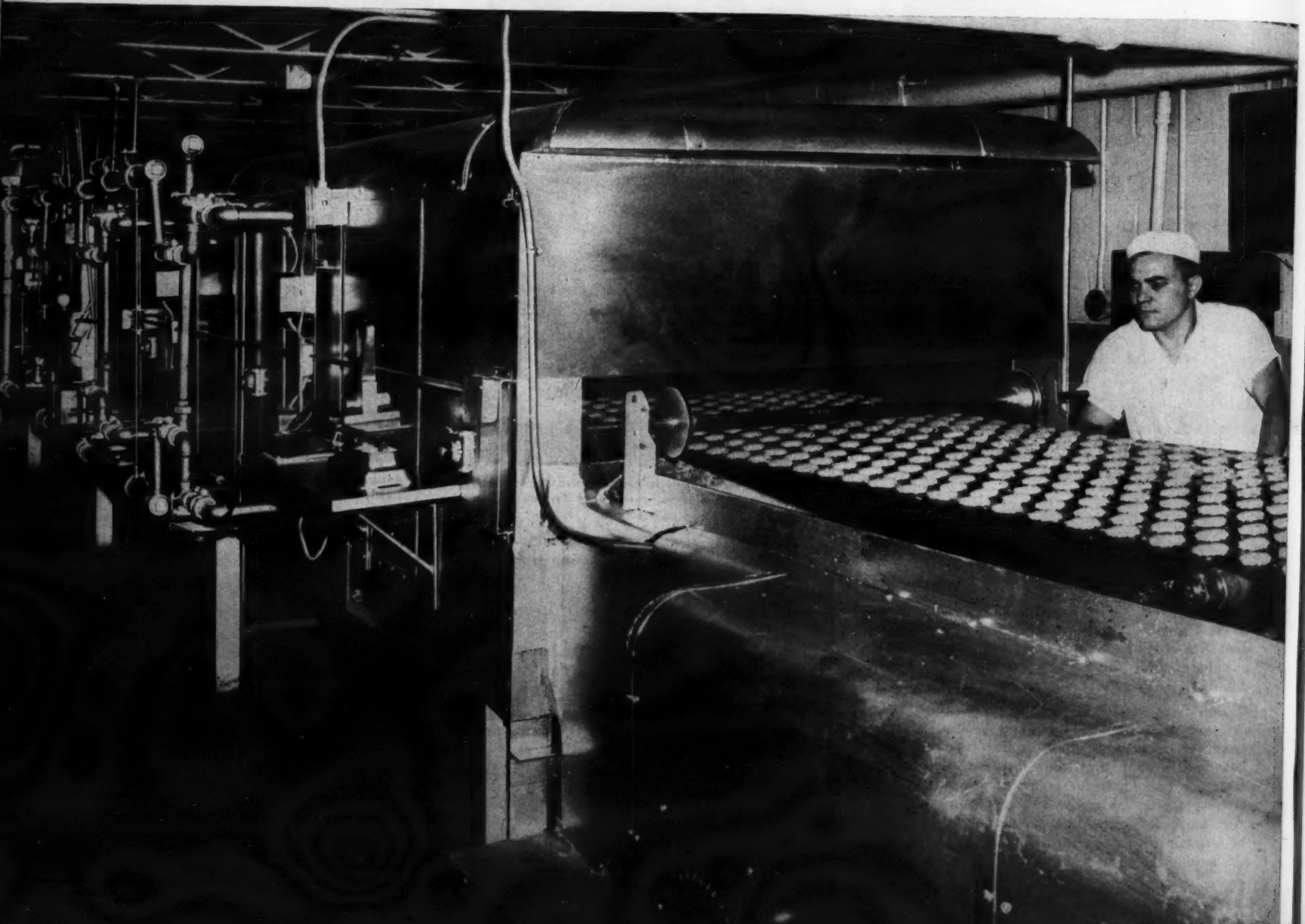


These two samples of macaroni were produced by different techniques. Close examination of bottom sample reveals checks and air holes

After closing cover, timing is set on dial and x-ray exposure turned on. Average exposure is ½ to 1½ minutes at Quaker Oats

- **Production boosted 21%**
- **Gas costs cut 20%**
- **Better color control**
- **Easier maintenance**

increased



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Cookies th
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efficiency achieved by radiant-heat baking

Operator sets controls. Thereafter control of temperature or shut-off, when production is interrupted, is entirely automatic

ROBERT J. HARTMAN, Superintendent
Midwest Biscuit Co.
Burlington, Iowa
as reported by FP staff

Modern-design gas-fired, radiant-heat ovens have cut baking time of cookies and other products 28% at Midwest Biscuit Co., Burlington, Iowa. At the same time the ovens have provided greater uniformity of bake, with better color control, and effected savings in gas costs of 20%. Speed-up in baking time, which increased production 21%, made it possible to eliminate swing shift for which it was difficult to secure help.

Photos show some of the construction, operating, and control features of the 150′, three-zone oven. While it is used primarily for wire-cut items, it also handles a quantity of bar cut-goods.

A comparison of baking time for new and old ovens, both using same dough, is shown in table.

BAKING TIME

Old ovens 150% Input		Radiant-heat ovens 200% Input
8 min	Vanilla Wafers	6¼ min
9 min	Sugar Cookies	8 min
10 min	3" Raisin Cake	8 min

Automatic controls contribute greatly to performance. They are simple and relatively inexpensive. They are easily set (see photo). Should production be interrupted, for any reason whatever, controls stop heat—then bring it up when production starts again. No cookies have been discarded because of control failure. Also, proper temperature is quickly established when first goods go through, with only about 1 row of scrap material at the start.

Operator never touches controls after setting them. Each of the 50′ oven zones has its own automatic controllers.

Cookies that have just emerged from cutter are about to enter oven. Scrap resulting, when bake is started, is a maximum of one row of cookies

Access doors are arranged alternately, on each side of oven, at 20′ intervals. Maintenance workers can step inside. Burner parts are easily accessible for cleaning. Vacuum is used to pick up cookies from oven floor without removing burners.

Heat product directly

Distinctive design of burner is the principal factor in efficiency of radiant-heat baking. Rays penetrate the air and heat the product directly. This is in contrast to old, conventional method involving transfer of heat from burner to air to product. At the end of heating cycle, the product is at a higher temperature than the surrounding air. While main source of heat is by radiation, secondary heat transfer is obtained from the oven band to goods in process.

Each burner manifold is serviced by independent, proportioned, power-type air-gas mixers, in conjunction with a common 16-oz combustion air blower, so that wide flexibility in burner usage to meet requirements of products being baked is obtained. This is achieved with no change in heat output of other burner manifolds in the zone.

The oven operates at a temperature range in various zones of from 350 to 600° F, with practically all 42 oven-burner manifolds in operation.

Temperature response of the oven to change in required operating conditions is very rapid for temperatures above 400° F, with all burners firing. An equally rapid response is obtained at lower temperatures, when products being baked require that some burner manifolds be turned off.

The original 150′ three-zone section of the oven length has been increased by a 30′ addition without adding burners. Further improvements are being studied at Midwest Biscuit Co. Radiant plus convection heating has increased production speed and cut costs; a possible step in the future is addition of a recirculating air system within oven.

(Radiant heat ovens utilizing Burdett radiant heat burners are designed by Burdett Mfg. Co., Dept. FP, 3433 West Madison St., Chicago 24, Ill. . . . or for more information check FP 3148 on handy form opposite last page.)

Here's a look inside Midwest Biscuit Company's radiant heat oven. Banks of burners are installed above and below band. Roomy interior simplifies maintenance

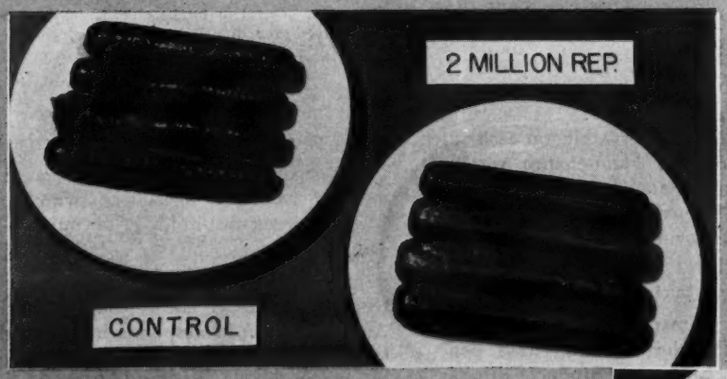
Each zone in 150' oven has conveniently located controls. Doors on each side, at 20' intervals, permit maintenance men to step inside oven

cover picture

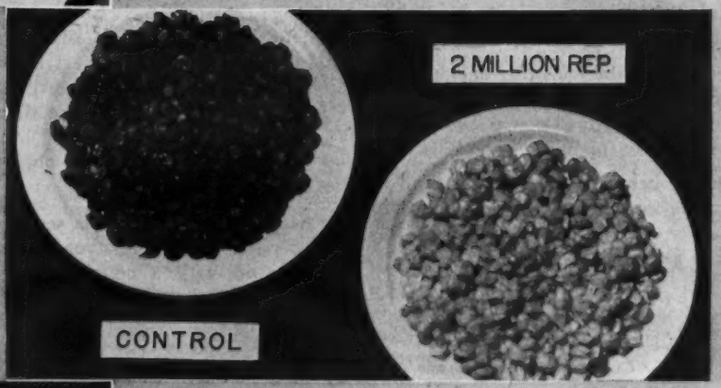
The two million volt electron beam generator, shown in construction on our cover, represents another step toward commercial application of ionizing rays to food processing. Previously, this electron generator, which consists of a resonant transformer and electron tube with a thin foil window, was available only in a one million volt model. Total depth of penetration, from two sides, for the new, higher-energy model is one-half inch in unit density (penetration in water), vs. 0.2" unit density penetration for the million volt machine.

General Electric Co., X-ray Department, 4855 Electric Ave., Milwaukee 1, Wis. has a complete pilot-plant facility, with one million electron beam generator, and will cooperate with commercial companies who wish to irradiate samples experimentally.

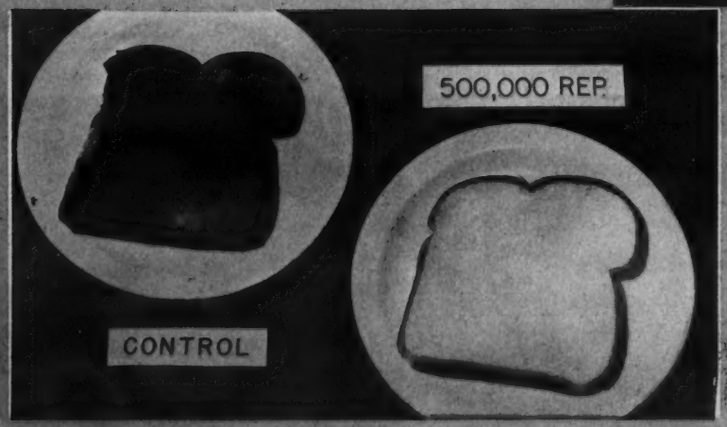
food radiation st



These wieners were irradiated on Jan. 20, 1955, stored in plastic film at room temp, and photographed on April 22. Control samples were discolored and spoiled . . .irradiated samples retained red coloring



Cut fresh corn was irradiated, stored at room temp during same test as wieners (above). Texture and color of irradiated samples remained good, while controls spoiled



Slices of bread were irradiated on Feb. 20, stored in sealed polyethylene bags, and photographed on April 22. Irradiated sample remained free of mold; control spoiled

sterilization makes new advances

QMC awards contract on economic and logistical feasibility . . . plans 1000 ton/month pilot plant for 1958 operation . . . here's what's known to date . . .

REUBEN POMERANTZ, Captain, QMC
Radiation Sterilization Officer Quartermaster
Food and Container Institute
for the Armed Forces, Chicago
as reported by **FP staff**

In late 1952, the Dept. of Defense initiated its study of the military potentialities of radiation sterilization, and an extensive feasibility study was undertaken in early 1953. These conclusions resulted: There was a tremendous logistical and economic advantage to the Dept. of Defense in a successful development of such a process. The Atomic Energy Commission at that time had decided to decrease its primary interest in the food technology phase, in an attempt to concentrate its efforts on the development of radiation sources. Industry, as a whole, was not willing to carry out the development because of the financial investment and attendant risks involved. The universities were not in a position to carry out the necessary technological development without substantial financial support. Other governmental agencies such as USDA did not feel that they could support the necessary effort.

As a result of this first feasibility study, and of coordinated conferences between AEC, Dept. of Defense, other governmental agencies, industry, and universities, the Dept. of Defense decided to embark on the program of Radiation Sterilization of Foods on a substantial basis in late 1953.

Radiation sterilization appears to hold enormous potential in the logistical operations of the Armed Forces, and the successful development of a process should provide great savings in many areas of our food supply program, which currently involves costs of several millions of dollars a day. This is readily apparent when one realizes that preserving food by ionizing radiations will enable the packaging of rations in containers which are more economical, lighter in weight, more conservative in the use of strategic material, less space consuming, and capable of prolonged storage with considerably less refrigeration. All of the above factors are essential attributes in the development of the military operational ration, but they are also most significant in the civilian economy.

To imply that ionizing radiation will eventually eradicate the necessity for refrigeration is not intended. Rather, irradiation—in conjunction with refrigeration —may well bring into the Armed Forces supply lines, perishable items which heretofore were only dreams in the eyes of the field soldier. In addition, the prolonged shelf-life of irradiated food items under refrigeration would take on special significance in our civilian markets.

Present status

Although development is still in its early stages, research to date suggests that sterility can be attained, and that the process can be adapted for commercial use. However, subtle bio-chemical changes in the foods are induced at certain levels of irradiation that result, in most cases, in the alteration of color, odor, flavor, or texture. Means are being devised to offset or diminish these undesirable effects through use of additives or by changing the physical conditions during irradiation. Obviously, until foods can be made fully acceptable, the advantages of cold sterilization cannot be fully realized. Therefore, present efforts

(*Continued on next page*)

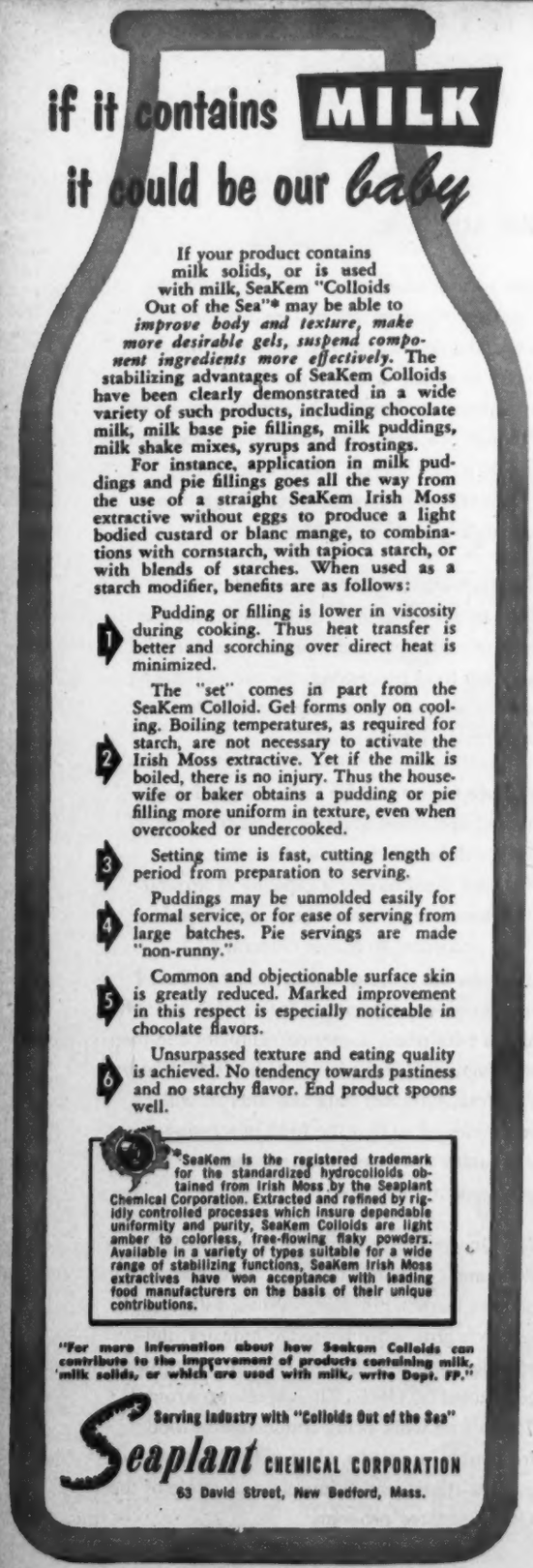
time schedule

After several years of preliminary studies by a number of organizations—public, private, and academic—a practical picture of the direction in which radiation sterilization investigations are heading is beginning to appear. Although practical commercial food irradiation appears to be "several" years in the offing, there is still considerable ground work being done right now.

With the awarding of a new contract by QMC to a leading industrial concern for the study of economic and logistical feasibility of radiation food processing, the use of ionizing rays has moved another significant step forward.

Another forward stride toward actual commercial operation which is planned by the QMC will be the design and construction of a pilot plant having a capacity of around 1000 tons per month, to be in operation in 1958, according to Major General K. L. Hastings, the Quartermaster General. Based on operational experience factor of 2 years, for such a pilot plant, a commercial plant can then be designed. It is the hope of the QMC that by that time, sufficient data and interest will be developed so that the food processing companies will be operating without government subsidies.

The Quartermaster Corps, through the QM Food and Container Institute, is evolving as a major spearhead in these studies, with over 40 research groups from private industry, universities, and foundations working on projects contracted by QMC. This represents around 75% of all work being conducted on food irradiation problems. Here is the background, present status, and future time schedule of the Quartermaster program:


if it contains MILK
it could be our baby
If your product contains milk solids, or is used with milk, SeaKem "Colloids Out of the Sea"* may be able to improve body and texture, make more desirable gels, suspend component ingredients more effectively. The stabilizing advantages of SeaKem Colloids have been clearly demonstrated in a wide variety of such products, including chocolate milk, milk base pie fillings, milk puddings, milk shake mixes, syrups and frostings.
For instance, application in milk puddings and pie fillings goes all the way from the use of a straight SeaKem Irish Moss extractive without eggs to produce a light bodied custard or blanc mange, to combinations with cornstarch, with tapioca starch, or with blends of starches. When used as a starch modifier, benefits are as follows:
1 Pudding or filling is lower in viscosity during cooking. Thus heat transfer is better and scorching over direct heat is minimized.
2 The "set" comes in part from the SeaKem Colloid. Gel forms only on cooling. Boiling temperatures, as required for starch, are not necessary to activate the Irish Moss extractive. Yet if the milk is boiled, there is no injury. Thus the housewife or baker obtains a pudding or pie filling more uniform in texture, even when overcooked or undercooked.
3 Setting time is fast, cutting length of period from preparation to serving.
4 Puddings may be unmolded easily for formal service, or for ease of serving from large batches. Pie servings are made "non-runny."
5 Common and objectionable surface skin is greatly reduced. Marked improvement in this respect is especially noticeable in chocolate flavors.
6 Unsurpassed texture and eating quality is achieved. No tendency towards pastiness and no starchy flavor. End product spoons well.
*SeaKem is the registered trademark for the standardized hydrocolloids obtained from Irish Moss by the Seaplant Chemical Corporation. Extracted and refined by rigidly controlled processes which insure dependable uniformity and purity, SeaKem Colloids are light amber to colorless, free-flowing flaky powders. Available in a variety of types suitable for a wide range of stabilizing functions, SeaKem Irish Moss extractives have won acceptance with leading food manufacturers on the basis of their unique contributions.
"For more information about how Seakem Colloids can contribute to the improvement of products containing milk, milk solids, or which are used with milk, write Dept. FP."
Serving Industry with "Colloids Out of the Sea"
Seaplant CHEMICAL CORPORATION
63 David Street, New Bedford, Mass.

When inquiring check FP 3149 opposite last page

(*Continued from preceding page*)

are largely directed toward controlling completely these changes in acceptibility.

In contrast to the changes in food acceptability caused by using high doses to achieve sterility, a relatively low dose can be used to pasteurize the food and not alter its acceptability. Such a process requires post-irradiation refrigeration to prevent the residual microbial population from proliferating. Meats packaged in plastic films and irradiated to dosages of 1 to 2 x 10^5 rep (Roentgen equivalent physical) have had their refrigerated shelf-life extended five to ten-fold. Partial treatments at even lower dosages (50,000 to 100,000 reps) have also proved to be successful in de-infesting grain and cereal products, since much lower dosages can effectively destroy insects and their earlier stages of eggs and larvae. Sprouting of potatoes and other tubers has also been successfully prevented by the use of relatively low dosages (15,000 to 20,000 rep) without causing adverse effects on the organeleptic qualities.

Advantages for food products

Based on evidence to date, here are the most promising avenues for future applications, as evaluated at this time:

To Extend Shelf Life of:

- **Products presently refrigerated**
- **Some products presently stored frozen —in some cases refrigerated storage might be substituted**
- **Products presently stored at room temperatures (radiation short of sterilization shows most immediate promise)**
- **Products susceptible to deterioration through sprouting**

Destruction of Insects, Larvae, Trichinae

Here are some of the most promising achievements realized to date:

Total Sterilization:

Pork, bread, green beans, sausage products, chicken, bacon, and some fish products

Surface or Partial Treatment:

Sausage products, fresh fruits, potatoes, insect deinfestation

Flavor change, the big stumbling block for radiation of many foods, is slight for some, while others develop strong objectionable odors. Recent studies under way at M.I.T. have indicated that in some cases the maximum dose unaccompanied by a significant flavor change may be as high as 2 million rep for asparagus, broccoli, brussels sprouts, green beans, spinach, chicken, and cod fish cakes; 2.5 x 10^6 rep for blanched beef liver, and as high as 3 x 10^4 rep for pork sausage. There are occasions, however, when factors—presently unknown —cause some products to be judged as unacceptable when irradiated at these levels. Recent re-

REAL FRUIT FLAVORS WITH THE FUGITIVE AROMAS CAPTURED

• RASPBERRY • STRAWBERRY • CHERRY • GRAPE

• FLAVOREX *real* fruit flavors are constantly gaining wider use in the manufacture of fine foods. These "real" fruit flavors may be used straight or with imitations to achieve extra deliciousness, richness, and character for your product.

Our "Low-Temp" process coaxes out and captures the very last drop of goodness in the fruit. Even delicately elusive, but important volatiles are collected and entrapped.

Write for full information and samples. Consult us on flavoring problems.

Also available: Complete line of highly concentrated imitation flavors for all uses.

FLAVOREX CO. INC.
MAKERS OF FINE FRUIT JUICE FLAVORS
302 S CENTRAL AVE BALTIMORE 2, MD

When inquiring check FP 3150 opposite last page

CROYDEN HOUSE
Quick-Cooking Facilities

SAVES YOU • TIME, • LABOR, • MONEY!

CROYDEN HOUSE offers you complete modern facilities for processing quick-cooking foods, i.e., rice, bean sprouts, peas, pea powder, beans, chick peas, beef and chicken soup bases, etc. We will process your food items or furnish same. Inquiries invited.

CROYDEN HOUSE FOODS
Suffern, New York

When inquiring check FP 3151 opposite last page

sults obtained with beef steak would indicate that under the right conditions, steak in the frozen state, and unfrozen bacon, may be irradiated at levels as high as 2.5 x 10^5 rep with encouraging results.

In taste panel experiments on fresh fruits conducted at the University of Michigan, it was reported the most promising results were obtained with fresh peaches and dark sweet cherries, since their flavors were least affected by gamma radiation. In addition, the flavor of cooked applesauce was not changed by irradiation. The group at Michigan has also found that packaged cut cabbage for coleslaw, when irradiated to 50,000 rep, could be stored at refrigerator temperature for as long as 25 days without noticeable changes.

All of the above leads are considered to be most encouraging by the QMC, and further observations and experiments are planned along these lines.

The Radiation Sterilization Research Program of the QMC is presently proceeding along these lines:

Radiation Source Evaluation

Dose Rate Dependence
Energy Dependence

Sensory Evaluation of Selected Food Items

Protein Studies

Flavor Studies

Container Studies

Literature Surveys

COLLABORATING ORGANIZATIONS

Industry

American Can Co.
National Canners Association
Swift & Co.
Pillsbury Mills, Inc.

Government

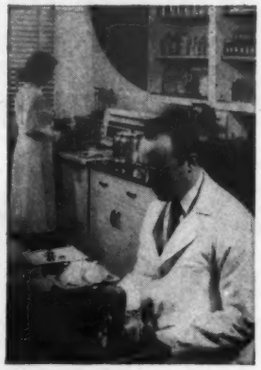
Atomic Energy Commission
Dept. of Defense
National Academy of Science
USDA
USDHEW

Toxicity studies, through both animal and human feeding tests, are being conducted through the cooperation of the Surgeon General's Dept. Animal feeding tests to date indicate that no toxic effects are evidenced after consuming irradiated food. Human feeding tests have just recently begun.

NEXT MONTH—check the radiation possibilities of your products in the FP Food Irradiation Appraisal charts — over fifty specific foods and their propects for successful irradiation are shown.

When inquiring check FP 3152 opposite last page

Eastman offers widest range of antioxidants



If your food product needs protection against rancidity, bad odor or off-flavor caused by oxidative deterioration, Eastman can help you.

Eastman is the leader in food-grade antioxidants. The leader in volume . . . in experience . . . in accumulated data.

No other manufacturer can offer such dependable counsel in the proper use of antioxidants for the stabilization of foods.

The effectiveness of Eastman recommendations and Eastman Tenox antioxidants has been proved on the following products:

Animal Fats and Oils	Cosmetics
Vitamin A	Monoglycerides
Cereals	Cookies
Butter Fat Concentrate	Essential Oils
Fish and Fish Meal	Citrus Oils
Chewing Gum	Potato Chips
Meat Products	Dog Food
Crackers	Premixes
Paper Board	Spices
Dairy Products	Wax
Chicken Fat	Candy
Vegetable Fats and Oils	Nuts

Don't let rancidity cause returns, losses and dissatisfied customers. Look into the simple remedy of antioxidants. Their cost is low.

Eastman will be glad to recommend an antioxidant treatment or even undertake a testing program for whatever food product you wish to stabilize. The recommendations you receive will represent the most effective treatment at the lowest possible cost. For Eastman offers a full range of antioxidants and has no axe to grind in favor of any one antioxidant. We make them all!

For more information about Tenox, write to Eastman Chemical Products, Inc., Kingsport, Tennessee—a subsidiary of Eastman Kodak Company.

Tenox Eastman Food-grade Antioxidants

SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tenn.; New York—260 Madison Ave.; Framingham, Mass.—65 Concord St.; Cincinnati—Carew Tower; Cleveland—Terminal Tower Bldg.; Chicago—360 N. Michigan Ave.; St. Louis—Continental Bldg.; Houston—412 Main St. **West Coast: Wilson Meyer Co.,** San Francisco—333 Montgomery St.; Los Angeles—4800 District Blvd.; Portland—520 S. W. Sixth Ave.; Salt Lake City—73 S. Main St.; Seattle—821 Second Ave.; **Canada: P. N. Soden Co., Ltd.,** Montreal, Quebec—2143 St. Patrick St.; Toronto, Ontario—1498 Yonge St.

When inquiring check FP 3153 opposite last page

These cakes were baked after 10 weeks storage of prepared mix at 100° F. No appreciable difference between the two types of shortening is evident

meat fat vs. vegetable shortening in prepared cake, biscuit mixes

Baking performance, shelf-life tests show no practical differences between the two classes of fat

G. T. CARLIN, H. BRODY, and R. J. BAEUERLEN
Research Laboratories
Swift & Company
as reported by **FP staff**

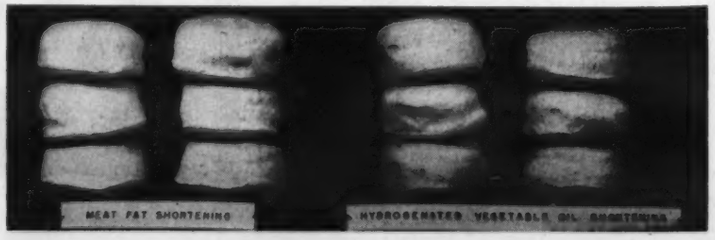
Recent tests indicate there are no differences in stability or baking performance between prepared cake and biscuit mixes using meat fat shortenings and those produced from vegetable oils.

Experiments consisted of preparing two master batches (one with meat fat, other with vegetable shortening) of three types of prepared mixes—yellow cake, white cake, and biscuit. Each batch was scaled into polyethylene bags which were stored for various times at several temperatures (45, 75, and 100°F).

At weekly intervals for a period of ten weeks, corresponding pairs were brought to room temperature and baked under identical conditions. Properties observed during tests included batter temperature, batter appearance, batter density, cake or biscuit volume, crust appearance, grain, texture, tenderness, flavor, and mastication properties.

In comparing the cakes, all properties were scored as equal except the grain and texture, which were found to be slightly closer and more fleecy in all cases with the meat fat shortening. The biscuits were scored as equal in all respects.

(Shortenings used in these tests were XXX Kakebake (blend of meat fat and vegetable oils) and XXX Vreamay (hydrogenated vegetable oil), which are commercial prepared mix ingredients made by Refinery Div., Swift & Co., Dept. FP, Union Stock Yards, Chicago 9, Ill. . . . or for more information check FP 3154 on handy form opposite last page.)



Similar test was made with biscuits. Photo shows results of final experiment, after 10 weeks storage of mix at 100° F

Correct tablet plus depositor unit assures controlled cannery salting

Seasoning in the cannery is discussed in an eight-page technical bulletin. Importance of accurate dispensing, which assures quality control, is emphasized. Flavor, cleanliness, operation without personal supervision are typical advantages cited in using scientifically-built depositors.

Salt tablet size recommended for various vegetables and fish, according to can size, are listed. Six models of depositors are illustrated including SG model which utilizes take-down disc instead of spout.

"Accurate Food Seasoning in the Modern Cannery" is issued by Scientific Salting Co., Subsidiary of Morton Salt Co., Dept. FP, 1530 Hadley St., St. Louis 6, Mo. When inquiring specify FP 3155 opposite last page.

Introduce ice cream mix stabilizers based on highly-refined milk protein

Colloidal, highly-refined milk protein is key ingredient in two recently-introduced ice cream mix stabilizers. First of these, called Rx Base, is for general use, contains the milk protein, vegetable gums, mono and di-glycerides.

The second product, called Rxf, is intended for high-temperature, short-time pasteurization and is same as the Rx except for omission of the glycerides. Both products reportedly have high water absorption and stabilizing properties.

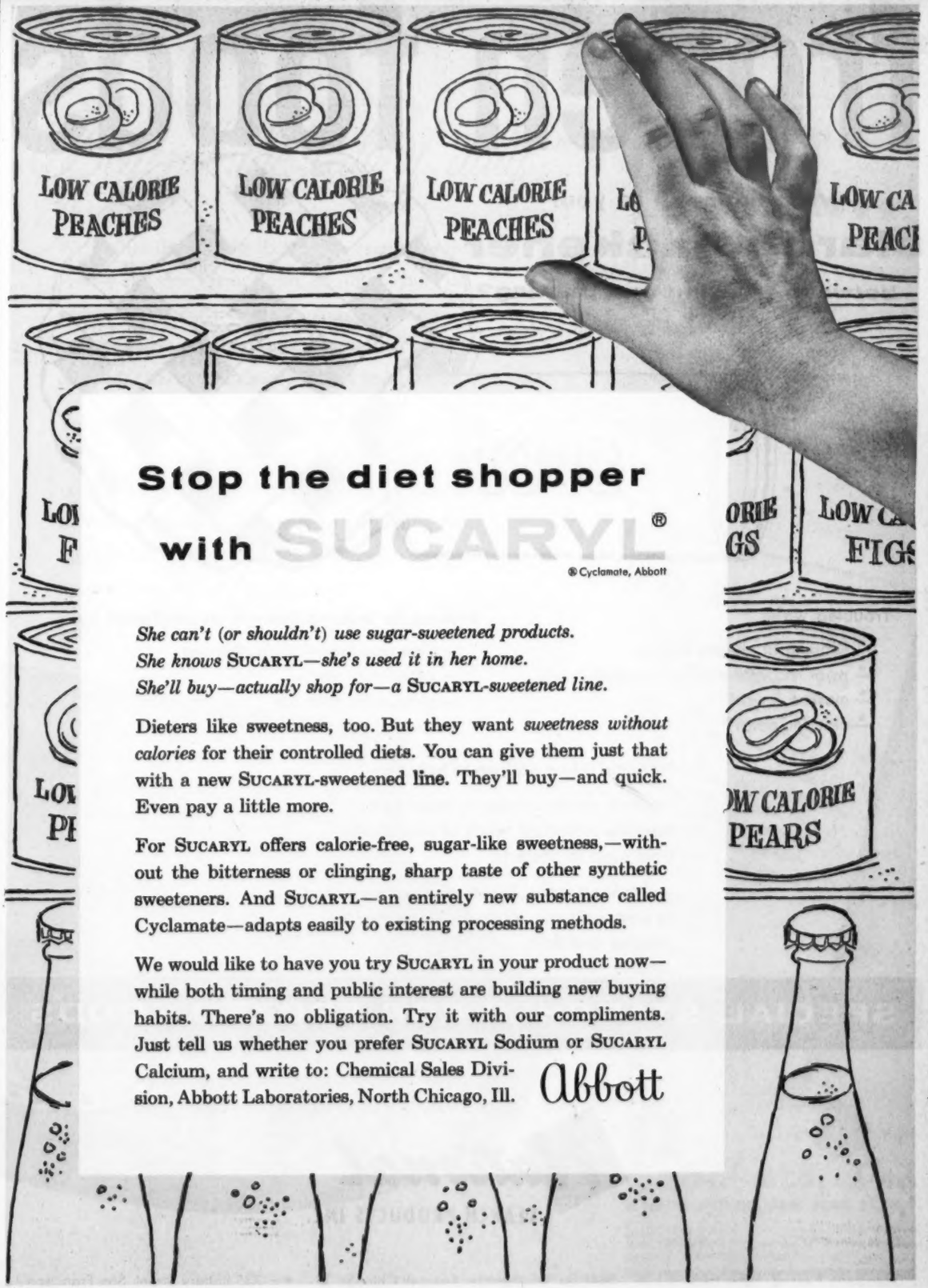
Rx and Rxf Bases are produced by Crest Foods Co., Dept. FP, Ashton, Ill. . . . or for more information check FP 3156 on handy form opposite last page.

Offer two new vanilla-base flavors for ice cream, other desserts

Two new vanilla-base flavors have recently been introduced. The first, called Butrnilla, is a powdered vanilla with a buttery note. It was developed for ice cream, but can also be used for powdered milk drinks, desserts, and cake mixes.

The second flavor is called Micronilla Vanrich, and is intended for ice cream, powdered desserts, chocolate coatings, and cake mixes. It is produced by grinding vanilla to microscopic particle size, and adding various aromatics.

(Butrnilla and Micronilla Vanrich are developments of Dodge & Olcott, Inc., Dept. FP, 180 Varick St., New York 14, N.Y. . . . or for more information check FP 3157 on handy form opposite last page.)



Stop the diet shopper with SUCARYL®

® Cyclamate, Abbott

She can't (or shouldn't) use sugar-sweetened products.
She knows SUCARYL*—she's used it in her home.*
She'll buy—actually shop for—a SUCARYL*-sweetened line.*

Dieters like sweetness, too. But they want *sweetness without calories* for their controlled diets. You can give them just that with a new SUCARYL-sweetened line. They'll buy—and quick. Even pay a little more.

For SUCARYL offers calorie-free, sugar-like sweetness,—without the bitterness or clinging, sharp taste of other synthetic sweeteners. And SUCARYL—an entirely new substance called Cyclamate—adapts easily to existing processing methods.

We would like to have you try SUCARYL in your product now—while both timing and public interest are building new buying habits. There's no obligation. Try it with our compliments. Just tell us whether you prefer SUCARYL Sodium or SUCARYL Calcium, and write to: Chemical Sales Division, Abbott Laboratories, North Chicago, Ill. Abbott

When inquiring check FP 3158 opposite last page

frozen foods

What happens to your

starch thickener

between freezing and thawing?

Troubled with:

- lumping or cheezy texture
- poor reconstitution with added liquids
- masked flavor
- clouded color?

Looking for a starch that will be unaffected by:

- time and temperature changes
- other ingredients
- processing methods
- variances in equipment?

National is in a position to help you:

—with a variety of special starches to meet the individual needs of your foods from soup to dessert.

—with food technologists who will be happy to work with you. Write or telephone for samples and data.

SPECIAL STARCHES FOR FROZEN FOODS

National
STARCH PRODUCTS INC.

270 Madison Avenue, New York 16 • 3641 So. Washtenaw Avenue, Chicago 32 • 735 Battery Street, San Francisco 11

When inquiring check FP 3159 opposite last page

Fact sheet tells the how of breading meat, poultry

Article describes current popular practices in breading of meat and poultry. Types of meat used, shaping techniques, freezing, actual breading are all discussed on mimeographed fact sheet.

Basic operations in breading are manually shown here. Meat is dipped in batter mix at right, and then in breading mix in center.

"Breading Meat Specialties" can be obtained from Modern Maid Food Products, Inc., Dept. FP, 110-20 Dunkirk St., Jamaica 12, N.Y. When inquiring specify FP 3160 opposite last page.

Oleoresin black pepper decolorized for seasoning meat products

Black pepper with all of objectionable green color removed is now available for seasoning meat products. Only color remaining is light yellowish tint. Seasoning is not free-flowing, but semi-fluid, and mixes readily with corn sugar and other dry bases.

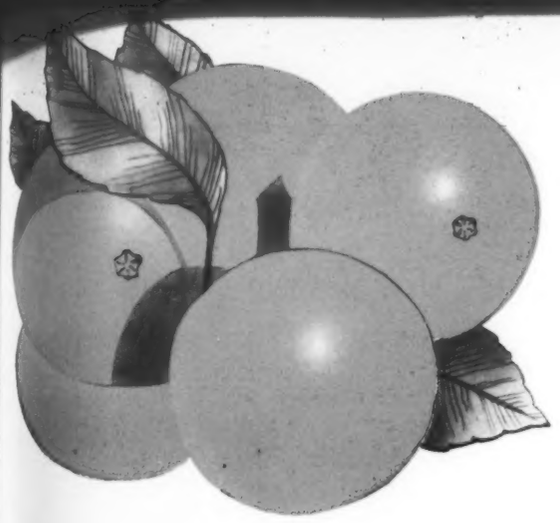
(Oleoresin Black Pepper Decolorized is development of Fritzsche Brothers, Inc., Dept. FP, 76 Ninth Ave., New York 11, N.Y. . . . or for more information check FP 3161, opposite last page.)

Offer modified chocolate stretcher for syrups, ice cream, beverages

Chocolate stretcher has been modified to include desirable "new-mown hay" character, for chocolate syrup, carbonated beverages, ice cream, and other products. It is used at ¼ to ½ oz/gal syrup or 5 gal ice cream mix.

(*Continued on page 29*)

For more information on product at right, specify FP 3162 . . . see information request blank opposite last page.

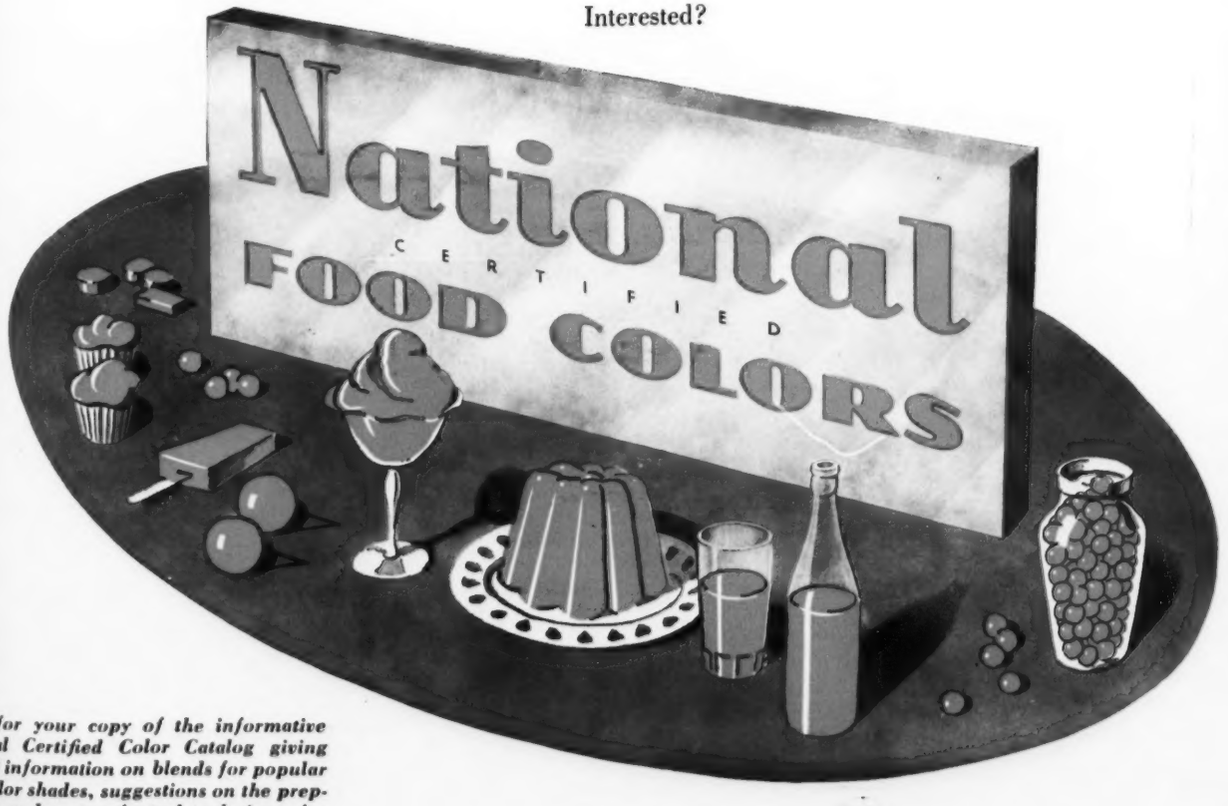


"Beyond the call of duty"

We realize that fine foods must be as pure as they look—and vice versa. So we go well beyond the necessities of certification to standardize the pure-dye strength, shade and composition of each of our 69 Certified Primary Colors and Blends.

For years the most respected concerns in the food industry have used National Certified Colors with complete satisfaction. We welcome the opportunity to work with food processors in improving the appearance of their products to increase consumer appreciation and enjoyment.

Interested?



Write for your copy of the informative National Certified Color Catalog giving helpful information on blends for popular food-color shades, suggestions on the preparation and care of stock solutions for various food products and other useful data. No cost or obligation.

CERTIFIED COLOR DIVISION
NATIONAL ANILINE DIVISION ALLIED CHEMICAL & DYE CORPORATION • 40 RECTOR ST., NEW YORK 6, N. Y.
Boston Charlotte Chicago Philadelphia Portland, Ore. San Francisco Toronto

Staley's ® PRODUCTS FOR BETTER FOOD PROCESSING

Zest steps-up sales with Better Flavor

Zest protects tasty goodness during heat and pressure cooking . . . gives your products Full Flavor Appeal!

More and more food processors are turning to Zest MSG to insure fresher, tastier goodness in canned and frozen foods. And it's no wonder, because Zest *never lets a flavor fade*, even under extreme steam table conditions! Even during cooking, when heat and pressure are most likely to rob your products of delicious natural flavor, you can depend on Zest to fortify and enhance fresh, natural food flavors. Zest adds no taste, color or aroma of its own . . . it brings out the desirable flavors already present. Zest is easy to use, just add it like salt. Start now to step-up your sales with better flavor by using Zest. See your Staley representative or write today for details.

STALEY'S 99% PURE **Zest®** MONOSODIUM GLUTAMATE

A. E. Staley Manufacturing Company, Decatur, Illinois

PRODUCTS FROM CORN Staley's AND SOYBEANS

OTHER QUALITY PRODUCTS
Sweetose® Syrup
Regular, Intermediate Corn Syrups
Soy Flours • Starches
Corn and Soybean Oils

When inquiring check FP 3163 opposite last page

(Continued from page 26)
(Flex-Sol Imitation Chocolate Cream Concentrate is development of Givaudan Flavors Inc., Dept. FP, 330 W. 42nd St., New York 18, N.Y. . . . or check FP 3164 opposite last page.)

Sugar cookies made with 5% dextrose exhibit antioxidant properties

Test results reveal that sugar cookies made with 5% dextrose are somewhat stable to oxidative rancidity, whereas cookies made without the dextrose show very little stability of this type.

Tests on color stability showed that addition of dextrose induced considerable initial browning, stability of which depended greatly on temperature and relative humidity. Generally speaking, the color was lost to a greater degree at higher relative humidity (up to about 34%) and at lower temperatures (25 to 38°C). Cookies without the dextrose had little initial browning, although they tended to darken with storage at 70°C.

(Work was performed at Kansas State College, Dept. of Flour and Feed Milling Industry, Manhattan, Kansas in cooperation with USDA Eastern Utilization Laboratory and Corn Products Sales, Inc., Dept. FP, 17 Battery Pl., New York 4, N.Y.)

Outlines use of hydrogen peroxide in production of Swiss cheese

Treatment of the raw milk used for making Swiss cheese with hydrogen peroxide reportedly results in improved quality of the finished cheese. Fact sheet describes procedure to be used for this treatment, includes bibliography of pertinent literature.

"The Per-Zyme Process for Making Cheese" can be obtained from Paul-Lewis Laboratories, Dept. FP, 4253 N. Port Washington Rd., Milwaukee 12, Wis. Check FP 3165 opposite last page.

"I think you'll be interested in what we've done with that feed additive, A. J."

FLAVORS for that VERY SPECIAL EFFECT...

Do you take real pride in the quality and flavor of your food products? If so, you'll want to know more about the following flavoring specialties, each of which has been developed to impart certain very special effects and to lend extra taste appeal to the finished goods.

CHEERIO . . .

For the makers of fruit cakes, plum puddings, and mince meats! These traditional holiday specialties may be greatly enriched in flavor and aroma by the economical use of the following remarkably successful flavoring specialties:

OIL BRANDY IMITATION No. 08
OIL RUM JAMAICA IMITATION No. 017
OIL MINCE MEAT SPICE

Samples and particulars on request.

REALLY TOPS . . .

In our laboratories, scientific chemical knowledge and practical experience have combined to produce many a peak performance. Nowhere is this better illustrated than in our fine line of Maple and Vanilla Flavor Specialties, of which the following are really tops:

FRITZBRO TRUE MAPLE CONCENTRATE
FRITZBRO AROME MAPLE IMITATION
PURE VANILLA CONCENTRATE
TENFOLD BOURBON
OLEORESIN VANILLA
EKOMO VANILLA IMITATION
FLAVOR COMPOUND No. 23274
BUTTER VANILLA IMITATION

Write for samples and recommended applications.

NUTTY, BUT NICE . . .

Nutmeats are a sure-fire consumer favorite—as the makers of cakes, candies and pudding desserts very well know. Their use of these popular ingredients is sometimes restricted, however, by the high cost of nutmeats and availability of supplies. To help lower costs and stretch limited supplies, many manufacturers are using our Imitation Nut Flavors in their formulations to very excellent advantage. Write us for samples and suggestions for using any of the following:

BLACK WALNUT
BUTTER PECAN
COCONUT
HAZELNUT
HICKORY NUT
MAPLE WALNUT
PEANUT
PECAN
PISTACHE

FRITZSCHE Established 1871 **Brothers, Inc.**

PORT AUTHORITY BUILDING, 76 NINTH AVENUE, NEW YORK 11, N. Y.

BRANCH OFFICES and *STOCKS: Atlanta, Georgia, Boston, Massachusetts, *Chicago, Illinois, Cincinnati, Ohio, Cleveland, Ohio, *Los Angeles, California, Philadelphia, Pennsylvania, San Francisco, California, St. Louis, Missouri, *Toronto, Canada and *Mexico, D. F. FACTORY: Clifton, N. J.

When inquiring check FP 3166 opposite last page

Using double-drum dryers, National Fruit Product Company achieves

continuous flaked pectin production

Production doubled, costs lowered, power requirements cut 40% by mechanization

Preliminary investigations were made on this bench-scale dryer. Drums measure 6" dia by 8" long

Formerly: The National Fruit Product Co. in Winchester, Va. employed a shelf-drying process to produce flaked apple pectins, which are used as preservatives and bakers' ingredients. The flaked form is reportedly more soluble, more stable, and has longer shelf life than the powdered product previously produced.

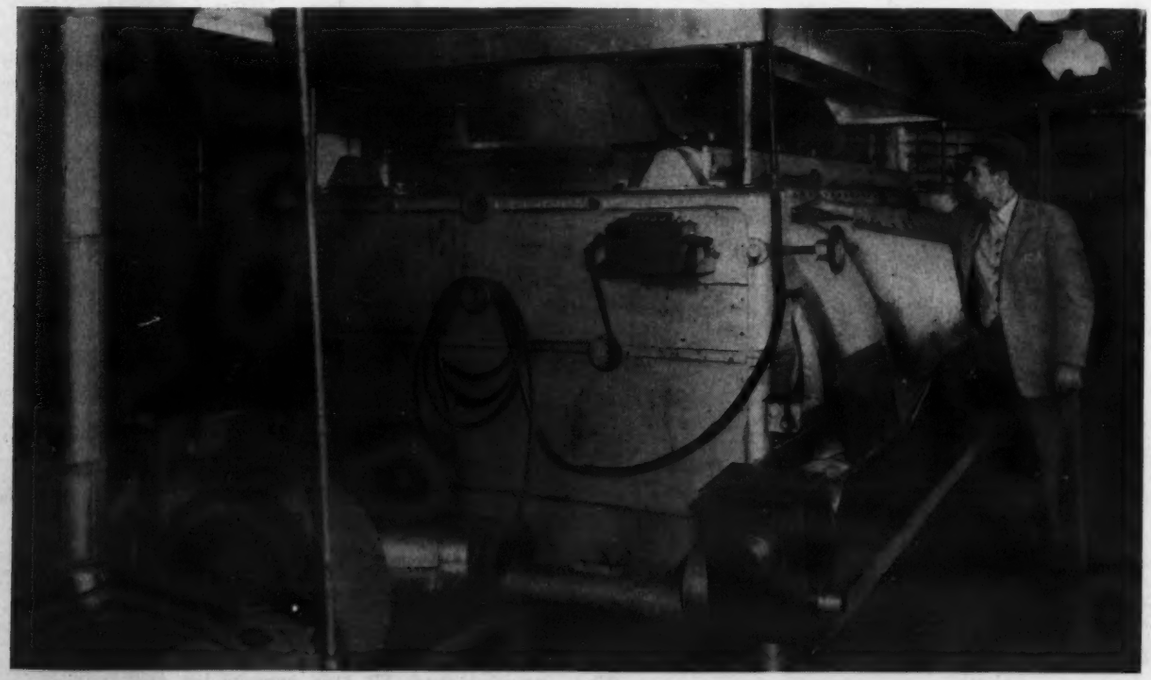
The shelf drying was considered laborious, time-consuming, and relatively expensive — so National Fruit Product initiated an experimental program to find a better method.

Now: Drum dryers have replaced the shelf dryers and since their installation, production has doubled, costs are lower, and power requirements are 40% less than the former batch process.

First steps in the changeover were extensive tests on a small bench-scale, drum dryer. This unit is a near-replica of the full-scale unit now used. The tests indicated that the method is practical, and the best combination of the many variables — such as film thickness, knife contact pressure, time of drying, temperatures — was then worked out.

Further tests were made on a scaled-up pilot plant at the equipment manufacturer's laboratory. This unit is twelve times the size of the bench unit, and effectively demonstrated the practicality of drum drying the pectins on a larger scale.

With the assurances provided by these tests the large atmospheric double-drum dryer was installed. Drums on this unit are 42" dia and 10' long,



Pectin is dried on this drum dryer, passes on screw conveyor to blower at left of photo, which carries it to flaker

heated by steam. In operation, dryer converts solution containing only 5% pectin into dry product containing only 2½% moisture. Contact time is only a few seconds.

Pectin solution is fed between the two closely spaced rotating drums by pendulum feed which distributes liquid uniformly over drums. Thin film forms on drums which dries in about two-thirds of a turn. Film thickness is determined by screw adjustment of drum spacing.

Sheets of dried product are scraped off drum by knife, fall into screw conveyor which breaks sheets up sufficiently to feed flaking machine. Latter reduces particle size to approximately 40 mesh, and material is then packaged in 100 lb drums.

(Drum dryer and flaker were manufactured by Blaw-Knox Co., Dept. FP, 2076 Farmers Bank Bldg., Pittsburgh 22, Pa. . . . or for more information check FP 3167 opposite last page.)

Here's how to construct your own sanitary salt dispensing bin

Intended for creameries and cheese makers, but applicable to other food processors as well, this salt dispensing bin has a number of advantages: 1) bottom salt is used first; 2) bin cover is opened only when bin needs filling; 3) gate dispensing allows faster and more accurate filling than scoop filling; 4) stainless steel construction allows easy cleaning and sterilizing.

Detailed drawings of the salt dispensing bin can be obtained by writing for "The Dairyman's Salt Guide" to Morton Salt Co., Dept. FP, 120 S. LaSalle St., Chicago 3. Check FP 3168 opp. last pg.

Salt dispensing bin can be constructed by user, has advantages of convenience and sanitation

At an Eastern food processing plant, slices of No. 1 potatoes up to 1¼-inch are pumped at 80 RPM, smaller diced No. 2 potatoes at 150 RPM. Mixers feed the salad into hoppers leading into the pump. A B-10 Moyno food pump moves the large slices gently through the pump and a 4-inch glass pipe into standard filling machines that fill pint, quart, and gallon jars. When the Moyno isn't pumping potato salad, it pumps other foods such as cooked cranberries, whole-kernel corn, pickle relish.

This Moyno® Pumps Potato Salad With Slices Up To 1¼-inch...Without Crushing!

The Moyno can pump potato salad and a lot of other materials without making mush out of them—because of the unique *progressing cavity* principle.

Moynos have no valves and pistons, no vanes or other devices that cause churning and turbulence. The Moyno has a simple screw-like rotor turning within a double-threaded stator. This design creates cavities which progress smoothly toward the discharge end of the pump, carrying the material being handled. The material is not squeezed or churned.

Pumps Practically Anything

That's why the Moyno successfully handles such hard-to-pump materials as non-pourable pastes, frits, plaster, highly volatile liquids, and materials containing large particles, such as potato salad, fruit, cherries, chow mein—even oysters! In fact, the Moyno handles practically anything that will pass through a pipe.

Many Other Advantages

Moynos pump many hard-to-pump materials with a minimum of abrasion and wear. Many plants have adopted Moynos simply because they last so long.

Moynos provide positive displacement. Moynos can pull up to 29 inches vacuum while discharging under pressure. Big Moynos deliver up to 500 gpm; can provide pressures up to 600 psi in the smaller frame sizes. They even get up to 1000 psi momentarily.

The Moyno is reversible—it pumps equally efficiently in either direction.

With the Moyno, accurately metered flows are obtainable by regulating operating speed.

Moynos are trouble-free. They are self priming; won't cavitate or vaporlock. There's just one moving part—no valves to stick, no pistons to gum up. Built for tough service. Easy to maintain. Moyno pumps are easy to take apart for cleaning.

Write For Bulletin

You may save a good deal of money or solve a tough problem by finding out about this simple, versatile pump. Write for Bulletin 30FP.

HOW IT WORKS

Rotor is like a stretched-out corkscrew. It turns within a stator that has a double internal thread. Thus rotor and stator form closely fitted cavities. As the rotor turns, these cavities progress evenly toward the discharge end of the pump without closing up. That's why the Moyno easily handles materials without crushing, churning, or aerating; and why it can handle so many different things—solids in suspension, pastes, abrasives, highly volatile liquids, tars, soaps, caustics—even cement and plaster.

FOR DESIGN ENGINEERS

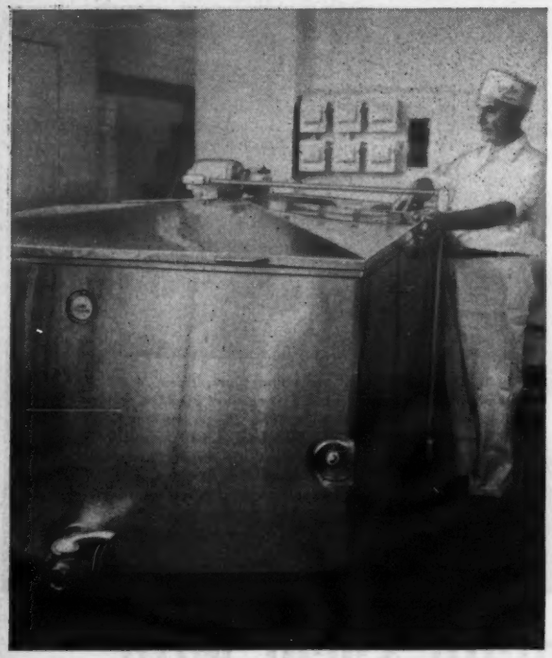
Moynos are available in small sizes and special designs for use in automatic washers, drink dispensers, sprayers, oil burners, machine tools, gasoline pumps, and a wide variety of other equipment. If you are designing machinery, we'll work with you, in confidence, to integrate pump design with your problem.

ROBBINS & MYERS, INC.

SPRINGFIELD, OHIO • BRANTFORD, ONTARIO

Fractional and Integral HP Motors | Desk, Window, and Household Fans | Hoists and Cranes | Moyno Pumps | Propellair Industrial Ventilating Equipment

When inquiring check FP 3169 opposite last page



Put yourself in his shoes

Matter of fact, that's not a bad place to be. For when you stand beside a Cherry-Burrell "Kold Vat" you're in a position to do so *many* things . . . to so *many* products . . with one stainless steel rectangular vat.

For example, you can use the heavily insulated "Kold Vat" for space-saving storage of raw or finished products . . . as a surge vat or for complete mixing without whipping or beating.

And with a "Kold Vat" you can quickly heat or cool almost any liquid or semiliquid product. Cherry-Burrell's exclusive enclosed channel wall surface assures rapid, effective heat transfer . . . with steam, hot water, cold water, "Freon," ammonia or some other refrigerant.

"Kold Vat's" square shape not only helps you pack *more* product into *less* space, but also leads to low rail height for easy dumping, observation and cleaning.

Your Cherry-Burrell Representative can give you complete dimension data on every tank from 150 to 1000 gallons. Call him or write for bulletin.

CHERRY-BURRELL
CORPORATION

427 W. Randolph Street, Chicago 6, Ill.

Dairy • Food • Farm • Beverage • Brewing • Chemical Equipment and Supplies

SALES AND SERVICE IN 58 CITIES — U.S. AND CANADA

When inquiring check FP 3170 opposite last page

new solutions of processing problems

Changes shrimp waste into fertilizer additive, beats pollution problem

Photo shows how yet another food plant is turning a waste disposal problem to advantage. Robinson Canning Co., Westwego, La., were formerly discharging the residue from their shrimp peeling operation — hulls and heads — into a canal adjacent to plant. With a stream pollution problem ahead, Robinson officials investigated methods of disposing of this by-product waste.

The vibrating screen separator shown was their answer. Now, the 800 gpm of waste water flows through a 20 mesh stainless screen, and shrimp by-products are discharged onto a 24" wire belt conveyor. Conveyor takes them to grinding operation. Product is sold as an additive for fertilizers.

One problem confronted by engineers in setting up the operation was that of blinding of the screen from the high velocity discharge. The existing pipe was 3" dia. A 4" pipe was tried, then the 6" size shown (which proved adequate) was installed. Oversize discharge spouts to provide for future increase in waste flow were also added. Shrimp "feelers" and small fibers are of a nature that contribute to blinding. By adjusting the eccentric relationships of weights which control the vibratory action of the screen, this tendency was forestalled.

(Sweco vibrating screen separator Model A-1D8 is product of Separator Div., Southwestern Engineering Co., Dept. FP, 4800 Santa Fe Ave., Los Angeles 58, Calif. . . . or for more information check FP 3171 on handy form opposite last page.)

NEW CATALOG

shows how to improve PUMPING PERFORMANCE

You'll find our packingless vertical pumps are particularly well adapted for immersion or sidewall installation. These pumps without seals or packing result in more practical, economical operation, are trouble-free and require less maintenance. Get our latest catalog form 7074-D for sound help on design improvement. (¼-7½ hp)

Other sizes (¼-75 hp) also available.

YOU SHOULD HAVE an Ingersoll-Rand circulating pump catalog if you are interested in, or responsible for, the development of pumping applications that require higher liquid levels.

Ingersoll-Rand

9-236 11 Broadway, New York 4, N. Y.

When inquiring check FP 3172 opposite last page

Protect against wind driven rain, deterioration

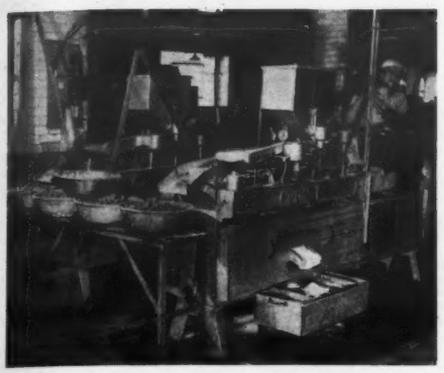
The tough durability of rubber-base paint is now available for OUTSIDE use on industrial buildings. Masonry surfaces protected with this tight coat of rubber-base Cementkote resist moisture penetration. It does not streak, "burn", crack or flake. New or patched surfaces need no curing delay or priming. Rain simply washes it free of dust, dirt, smoke, soot!

FREE! Your business letterhead request brings complete information on Rubber-base Cementkote for EXTERIOR masonry. Write us today!

GOT A SWIMMING POOL? Tropical Pool Paint is rubber-base, non-fading; resists moisture, mildew, chlorine. Beautifies, protects. Needs no primer. Write for Pool Paint Bulletin.

TROPICAL PAINT COMPANY
1130-1218 W. 70th St., Cleveland 2, Ohio
Heavy-duty Paints Since 1883 Subsidiary Parker Rust Proof Co.

When inquiring check FP 3173 opposite last page



These two machines form meat balls, dust them with flour automatically

'Mechanized meat balls' formed fast at Libby's

Meat balls can roll out of these two machines at Libby, McNeill & Libby Chicago plant at possible rate of up to 400/minute for each. Each ball is uniform in shape, a feat hard to attain under usual production conditions. Furthermore, if a different size product is to be run, the size of the ball can be changed in a moment by merely turning a handle or varying the speed.

The meat balls are formed by extrusion from the 100 lb hopper. They are cut by a reciprocating wire, dusted with flour as they drop onto an eight inch conveyor and are discharged to the can-filling lines.

Size of ball is ½ oz at the 3-400/minute rate. At 300/minute, this is equivalent to 1111 lb of meat formed per hour. Larger balls can be formed at slower speeds. The maximum production rates per machine are equivalent to that of approximately 10 girls working at tables.

Machine is 10' long, 4' wide, 5' high. Contact parts are of stainless steel. Gears and bearings are standard machine parts available in most cities. Dismantling for complete clean-up takes but a few minutes.

(Model AE 101 Cut-Rol meat ball forming machine is product of Alba Engineering Co., Inc., Dept. FP, 5707 S. Alameda St., Los Angeles 58, Calif. Check FP 3174 opp. last pg.)

Controlling size of meat balls is simple matter of turning a handle

Low in cost! Highly effective!

Midwest food processor handles corn products with two FLEXMOUNT Oscillating Conveyors. In the insulated conveyors material is steamed enroute. Particularly important: the ease of cleaning which prevents bacteria growth.

FLEXMOUNT Conveyors can be installed from stock

Standardize on this versatile oscillating conveyor for your hard-to-handle materials

MASS-PRODUCED in standard lengths and standard widths, FLEXMOUNT Oscillating Conveyors cost far less than specially engineered units. They can be built up to any required length ... from sections *carried in stock.*

FLEXMOUNTS are as easy to install as they are to order. Requiring an opening only slightly larger than the trough, they're a natural for restricted space. And the all-metal, leakproof trough has proved the low-cost and sanitary method for moving scores of hard-to-handle materials.

Get complete information on FLEXMOUNT Oscillating Conveyors from your nearby Link-Belt office or distributor. He can give you a "desk-top" demonstration of FLEXMOUNT efficiency. And be sure to ask for Book 2478.

How Positive Action moves material

Positive-action, constant-stroke eccentric provides a powerful, yet gentle upward and forward oscillating motion. Large volumes of material are moved in a uniform, continuous flow, regardless of surges. Resonant spring action of resilient legs cuts power requirements to a minimum.

LINK-BELT

FLEXMOUNT OSCILLATING CONVEYORS

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office: New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World. 13,443

When inquiring check FP 3175 opposite last page

Processors' Profit Control starts with Temperature Control

COPELAMETIC
THE *Accessible* HERMETIC

Positive refrigeration for perishables . . . that's the big reason so many food processors specify dependable Copelametic motor-compressors for their pre-cooling, freezing and storage operations.

Your merchandise can be processed at the peak of freshness and flavor, thanks to Copelametic's round-the-clock temperature constancy. Copeland's years-ahead design and precision manufacture build this long-run performance into every unit.

Permanent, forced-feed lubrication eliminates manual oiling, hushes operating noise to a whisper. Economical Copelametic units deliver consistently high BTU at low current input. Best of all, Copelametic combines hermetic advantages (no belts or seals) with *accessibility* . . . the plus feature that permits on-the-spot servicing. No Copelametic ever requires return to the factory!

Start holding a closer profit line . . . specify Copeland equipment, and get the positive refrigeration that means extra revenue and a higher-quality food product.

Copeland
DEPENDABLE Electric REFRIGERATION
COPELAND REFRIGERATION CORPORATION SIDNEY, OHIO

When inquiring check FP 3176 opposite last page

Ideas gleaned from
- research
- other industries
- managerial practices

malts grain continuously

Fully automatic pilot tower considered valuable research tool in malting technology

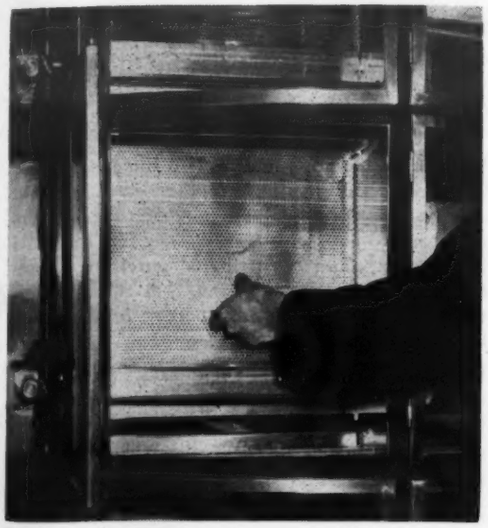
Pilot-scale prototype of continuous gravity malting tower has recently been constructed at Meyer Malt & Grain Corp., Buffalo, N. Y. In this unit—a one-twelfth scale model of proposed production unit—grain enters at top, is processed automatically and continuously as it proceeds through tower, and emerges at bottom as malt. Process is named after its inventor, E. E. Frauenheim.

Tower is 20'8" high, with a 5' base. It is divided into three sections to perform the three principal operations in malting. In top section grain is steeped for about two days. It then moves automatically into germinating section, composed of six vertically-arranged compartments. Moving progressively through each of these compartments grain germinates under controlled conditions in approximately six days. Final operation is kilning, which takes place in two-stage, vertical-type kilns and requires two more days.

Instrumentation of this unit is very extensive. Some 42 variables are recorded

Tower is completely accessible, by means of small glass doors throughout, and an elevator platform (on which men are shown standing)

Shown here is steeping section of tower. Entire steeping operation is automatically controlled, as are the other operations



This is germinating section. Shafts and gears at left turn the germinating grain

automatically, and 52 valves, dampers, and gates are controlled by instruments. In steeping section, for example, instruments regulate steep water temperature; drain, replace, and circulate the water; control compressors which aerate the water; regulate overflow of water; and empty tanks.

Controllers for germinating section maintain predetermined temperature in each of the six compartments; maintain humidity at 100%; operate refrigeration unit; regulate water valves. In kilning section, temperatures in each kiln are automatically controlled. Fans, blowers, etc. are also controlled automatically.

Tower is surrounded by platform, which travels up and down entire height for close inspection of any section. Inspection is further facilitated by incorporation of 168 glass doors on tower.

In addition to being a proving ground for the proposed production unit, the pilot model is considered a valuable research tool, since production variables can be closely controlled.

(Frauenheim process has been patented by Meyer Malt & Grain Corp., Dept. FP, 1314 Niagara St., Buffalo 13, N. Y.)

NEXT MONTH . . .

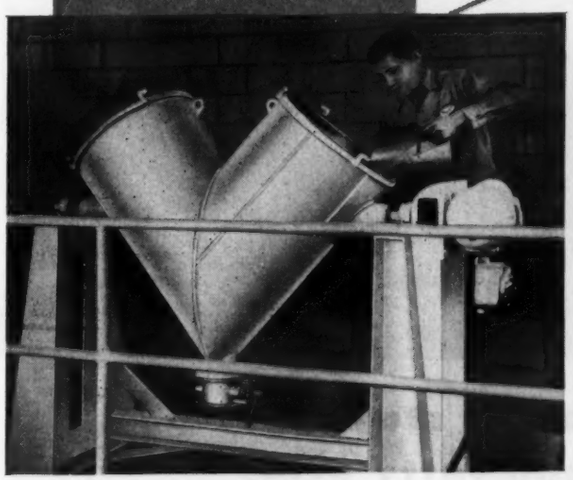
Spotlight on the regular Instrumentation section — to bring you right up to date on this vital phase of food processing. New developments, case histories, buyers guide will all be included.

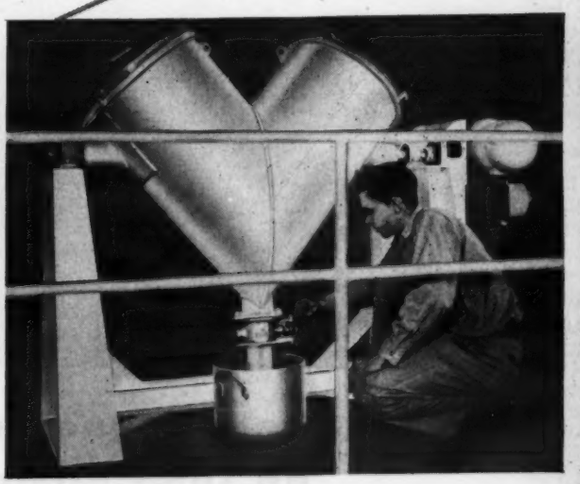
For good taste

For good health

For good blending

Vitamins
B_1, B_2, Niacin and Iron





Delicious Cream of Rice is a family favorite. Enriched with essential vitamins, it not only tastes good, but is good for you.

Thorough blending of vitamins is, of course, imperative. A **p-k** 5 cu. ft. stainless steel blender*, equipped with intensifier bar*, effectively blends four basic vitamins—niacin, thiamine, riboflavin and iron compound. This is another example where the food industry has selected the **p-k** twin shell blender to precision blend these important vitamins.

Loading is simplified by quick opening, dust-tight covers. Discharge is rapid, too, with the pre-blended vitamins emptied directly into containers for subsequent blending with the rice. Its smooth baffle-free interior facilitates clinical cleaning.

The application of **p-k** twin shell dry blenders to your particular processes will assure efficient blending at low cost. Why not pre-test your materials in **p-k**'s special blending laboratory. Send a sample of your materials for a thorough blending analysis, or write for catalog 12, no obligation.

* patented

the **Patterson-Kelley Co., inc.**
2780 Lackawanna Avenue, East Stroudsburg, Penn.

2527

101 Park Avenue, New York 17 • Railway Exchange Building, Chicago 4 • 1700 Walnut Street, Philadelphia 3 • 96-A Huntington Avenue, Boston 16 • and other principal cities.

When inquiring check FP 3177 opposite last page

Cold pasteurization of beer—current status of research

Much work has been done in recent years on finding a practical method for pasteurizing beer without heat, since conventional thermal treatments can impair product quality. Some of the proposed methods and the progress made to date are listed below:

Ultrasonics—Major problem with this medium has been temperature control. Workers have been unable to separate lethal effects due to heat from those due to ultrasonic waves. They feel that total lethal effect could be attributed purely to a time-temperature relationship, and that ultrasonics is not at this time a practical method of preserving beer.

Ultra-violet radiations—These rays, while lethal to microbes, have very little penetrating power, so that the beer must be treated in thin layers. Practical experiments have shown that the penetrating power is just too small to be effective.

X-rays and cathode rays—X-rays are not considered practical for pasteurizing beer, since the expense attending their production is prohibitive. Cathode rays, however, are quite effective and can be produced more efficiently. Use of these rays on a number of foods has produced good results, although off-flavors and color changes develop. Experiments with beer have apparently not been reported.

Fission products—Attempts have been made to use radioactive waste products, provided by AEC, to preserve foodstuffs. Work reported before (FOOD PROCESSING, January, 1955, p. 35) indicates that the method is not too practical. Large dosages are required (55,000 roentgens) and beer undergoes considerable color and flavor change.

Dielectric or electronic pasteurization—These radiations are extremely high frequency electromagnetic waves (10 to 150 megacycles/sec), produced by radio frequency generators. Treatment of beer with these waves has produced sterilizing effects — which, however, are now thought to be due entirely to the heat energy generated. Therefore (and since they are expensive to produce) they are not actively considered for beer pasteurization.

In general, no one of these methods is far enough advanced to be considered a practical substitute for heat in pasteurizing beer. Color and flavor changes are the principal problems and will probably receive the bulk of attention in the future.

A further consideration: FDA has indicated that it will be considerably more strict in approving foodstuffs which have undergne radiation treatment than those treated conventionally.

(From "Perspective" April, 1955, issued by Barry-Wehmiller Machinery Co., Dept. FP, 4660 Florissant Ave., St. Louis 15, Mo.)

These Crane valves stay tight on soap oils and fatty acids

THE CASE HISTORY—Leakage through valve seats in raw materials supply lines posed a serious problem for Davies-Young Soap Co., Dayton—makers of various type soaps and cleaning fluids. Unwanted materials leaking past metering stations would infiltrate processing vats.

Four different makes of valves were tried before these Crane valves were installed. With all four, results were the same—seat leakage developed quickly; the valves lasted no more than 4 to 8 weeks.

Valve replacement costs were a factor on top of production losses.

The condition was remedied on installation of Crane No. 1670 Ni-Resist cast iron valves in January 1954. Eighteen months later—with no piping maintenance and no shutdowns whatsoever—the Crane valves are still holding tight. And they show no deteriorating effects from the fluids handled.

Crane Ni-Resist gates don't *look* much different from similar valves of other makes. Their difference is in properly designed, accurately finished seating of 18-8 SMo stainless steel—plus the *extra* erosion-corrosion resistance of Ni-Resist bodies and bonnets cast by Crane. Thrifty buyers know these valves have no "equal" for handling many hard-to-hold, mildly corrosive fluids.

You should have the new folder (AD2047) on these valves. Ask your Crane Representative for a copy, or write to Crane Co., General Offices, Chicago 5, Ill. Branches and Wholesalers serving all industrial areas.

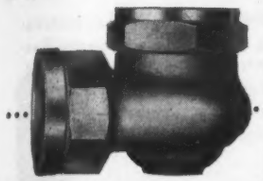
CRANE CO.

VALVES • FITTINGS • PIPE
KITCHENS • PLUMBING • HEATING

CRANE'S FIRST CENTURY...1855-1955

When inquiring check FP 3178 opposite last page

SPRAYING SYSTEMS CO.



for lower cost

and better performance

SPRAY NOZZLES

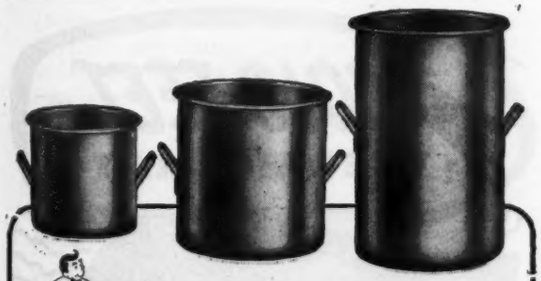
Modern design. Precision machining. All materials. Thousands of standard industrial spray nozzle types and sizes to choose from. Years of proved experience at your service.

write for this great new catalog today

Ask for our new 48 page Catalog No. 24 . . . the most comprehensive spray nozzle catalog ever produced. Yours for the asking.

SPRAYING SYSTEMS CO.
3213 Randolph Street • Bellwood, Illinois

When inquiring check FP 3179 opposite last page



thrifty to use

You can keep Hackney Seamless Containers clean and sanitary with far less time and effort because they're formed from one piece of metal. The interior has no welds, rivets, or crevices to catch or hold food particles. Designed to give years of service, with strong top curl, stout welded handles and tough bottom wearing ring. Your choice of black, galvanized or tinned steel, stainless steel, or aluminum—in several sizes. Write for details.

Pressed Steel Tank Company
Manufacturer of Hackney Products
1459 South 66th Street, Milwaukee 14, Wisconsin

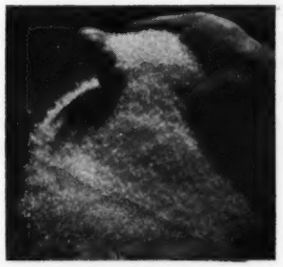
Hackney

CONTAINERS FOR GASES, LIQUIDS AND SOLIDS

When inquiring check FP 3180 opposite last page

Polyethylene wax for packaging offered in small pellet form

A synthetic wax made from polyethylene has been developed for use in packaging. Food industry applications will be mainly in melt coatings, such as those used for bread wrappers, milk cartons, etc. Wax is reportedly harder, more moisture-resistant, has higher melting point than most present waxes, both natural and synthetic. It is compatible with most other commonly-used waxes in the food industry.



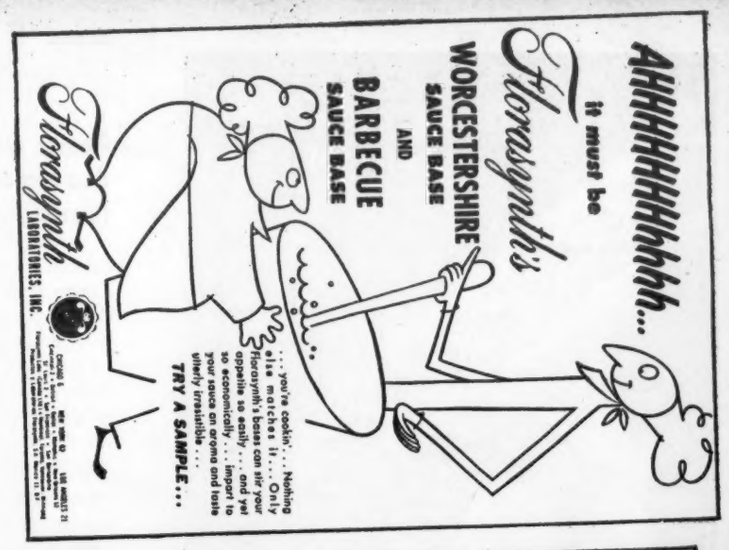
Wax is available in small pellet form (contrasted to conventional blocks or slabs) and is packaged in easy-to-handle fifty-pound bags.

(Epolene wax is a development of Eastman Chemical Products, Inc., Dept. FP, 260 Madison Ave., New York 16, N. Y.)

Proper storage temperature prior to dehydration improves product

USDA reports, after an extensive study, that the best storage temperature for sweet potatoes prior to dehydration is 60°F. Potatoes stored up to six months at this temperature yielded dehydrated products with a bright yellow-orange color, carotene content of 225-250 ppm, ascorbic acid content of 35-40 mg/100gm, and approximately 100% rehydration.

Reprints of paper on this work can be obtained from Southern Regional Research Laboratory, Dept. FP, 2100 Robert E. Lee Blvd., New Orleans, La.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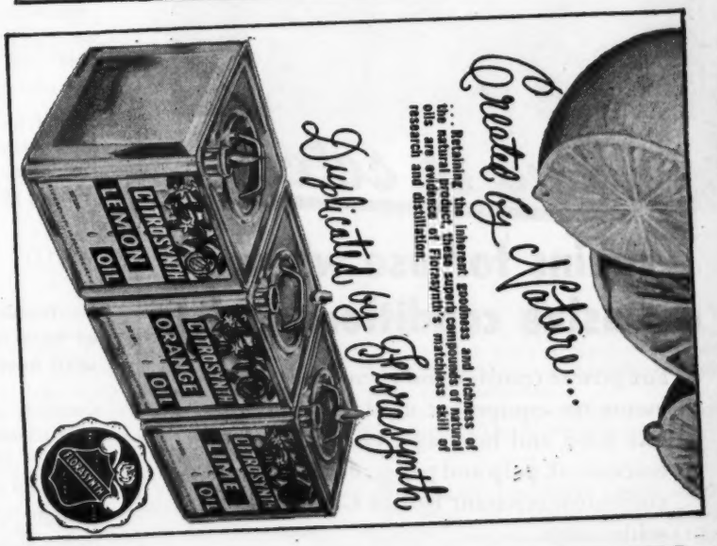
it must be
Florasynth's
WORCESTERSHIRE SAUCE BASE
AND
BARBECUE SAUCE BASE
...you're cookin'... Nothing else matches it.... Only Florasynth's bases can stir your appetite so easily ... and yet so economically ... import to your sauce an aroma and taste utterly irresistible ...
TRY A SAMPLE...
Florasynth LABORATORIES, INC.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...Retaining the inherent goodness and richness of the natural product, these superb compounds of natural oils are evidence of Florasynth's matchless skill of research and distillation.
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PROTOVANOL
an AMAZINGLY EFFECTIVE REPLACEMENT FOR COUMARIN . .
PROTOVANOL "C" is at least 50% stronger in flavoring strength than Coumarin Fine Crystals, is fully soluble in alcohol, propylene, and to an extent even in vegetable oils . . . PROTOVANOL "C" has amazing versatility readily mixed in various dry bases . . . and easily absorbed in cane sugar, corn sugar or starch . . .
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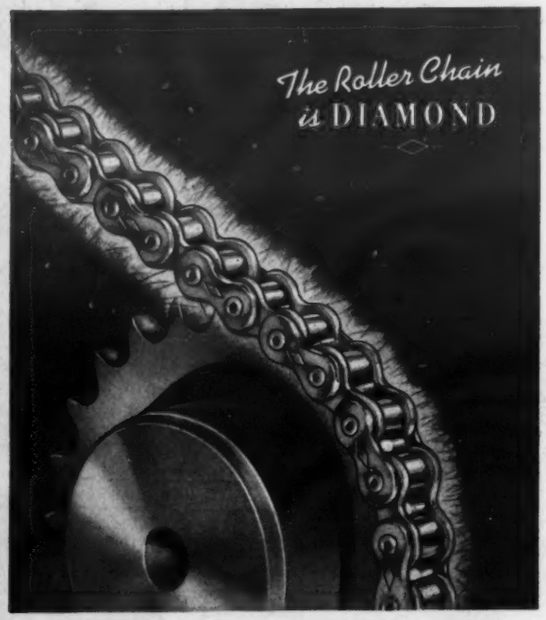
EXECUTIVE OFFICES
900 Van Nest Ave. (Box 12), New York 62, N.Y.

When inquiring check FP 3181 opposite last page



How to select

chains for use where corrosive conditions exist

For power transfer and conveying movements on equipment used in industries like food and beverage, chemical, pharmaceutical, pulp and paper, etc., Diamond corrosion-resistant Roller Chains are in wide usage.

These Chains made of stainless steel and bronze incorporate the same Diamond uniform high quality, long-life performance—and positive non-slip operation.

DIAMOND CHAIN COMPANY, Inc.
Dept. 410, 402 Kentucky Avenue, Indianapolis 7, Indiana
Offices and Distributors in All Principal Cities

Pages 104 to 110 from catalog 649 include tables on how to select chain to meet hundreds of varying conditions created by the presence of corrosive agents. Copies on request.

DIAMOND ROLLER CHAINS

When inquiring check FP 3182 opposite last page

Dental caries in rats decreased by food grown in fluorine-rich soil

Research conducted by McClendon and Gershon-Cohen at the Albert Einstein Medical Center in Philadelphia indicates that foods grown in soils enriched with fluorine may help to reduce dental caries. Work to date has been confined to rats — in the test described, 25% of fluorine-fed rats developed caries, while 81% of a control group developed them. Rats on fluorine diet also gained more weight, although they exhibited some fluorosis.

Fluorine diet was obtained from crops grown in soil heavily fertilized with Tennessee brown rock phosphate containing 3.6% fluorine. Control diet foods were grown in water solution. Diet from fertilized soils contained more than 66 ppm fluorine, control diet contained 3 ppm.

Similar tests were made with iodine-enriched soils. Most rats fed foods grown in these soils were goiter-free, while a large percentage of control animals developed goiters.

Electronic scanning, counting of food impurities possible with new cathode tube

Counting impurities in foods such as flour; bacteria plate counting; blood cell counting are some of possible uses for electronic device which operates somewhat like a television picture tube.

Basically, unit "sees" objects in its counting chamber, counts them one by one, remembers what it counts, and transfers totals to electrical tote board where they appear as lighted numbers. The "seeing" is accomplished by a cathode-ray tube, whose screen light pattern consists of 1000 lines. Objects in counting compartment are scanned line by line, with reflected light falling on photo cell, which generates electric signal, in turn passed on to memory section and computer. Entire sequence takes place in only one second.

Groups of objects lumped together with no space between will be counted as one. Irregularly-shaped objects or those with holes in them will be counted individually. However, if there are individual objects within these holes, they also will be counted individually. Different size objects in the same sample can be counted separately or together at the same time.

(Iconumerator is a development of Allen B. DuMont Laboratories, Inc., Dept. FP, 750 Bloomfield Ave., Clifton, N.J. . . . or for more information reader may simply check FP 3183 on the convenient Reader Service slip opposite last page.)

ACCURATE

Lumenite Electronic
LIQUID LEVEL CONTROLS

With no floats—no moving parts in the container (except non-conductive liquids) these Lumenite Electronic Liquid Level Controls maintain exact levels of water, milk, syrups, etc., in tanks, reservoirs, boilers, processors, freezers—either open or under high pressure.

Clean—Sanitary
Simple to Install
Require no Servicing

Write for Bulletin FLM—on Liquid Level Controls
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Bulletin FN—on Non-Conductive Liquids

DEPENDABLE

Lumenite Automatic
TIMING CONTROLS

Lumenite Timers are the simplest, sturdiest and longest life. Accurate to fractions of a second, they speed and make more accurate all types of timed production.
For Details ask for
Bulletin LT—Standard Time Switches
Bulletin CR—Cycle Repeating
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Bulletin RMC—Auto. Reset Timers
Bulletin ET—Electronic Timers

Lumenite Electronic Company
407 S. Dearborn St., Chicago 5, Illinois

When inquiring check FP 3184 opposite last page

Warm COLD FEET with
• THERMO-MAT •

Are COLD FEET because of cold floors a year round problem in your plant? We can solve your problems with our electrically heated Neoprene Thermo-Mats. (No rubber.) Will not affect room temperature. Describe type of floor and state air temperature in area of use.
Write for descriptive literature.

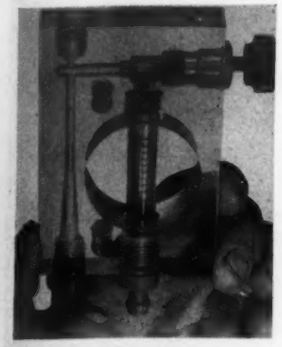
$12.00 delivered
THERMO-MATS are custom-built to your individual heating requirements in wattages ranging from 40 to 250. You get the right heat for your floor with THERMO-MAT!

THERMO-MAT COMPANY
814 South Robertson Blvd.
Los Angeles 35, California
Dept. P

When inquiring check FP 3185 opposite last page

Controlled small volume flow provided by tiny feeder

Flow more accurate than if regulated by metering pump, with no danger of breakdown



Feeder has application where small but well-regulated flow of an additive liquid is necessary. Unit operates on suction principle—water introduced at top creates vacuum across jet nozzle. Vacuum lifts additive liquid from inlet at bottom through metering tube and into water stream. Jet also serves to mix additive liquid with the water and ejects mixture through outlet at bottom left.

Rate settings are made with needle valve at right, and flow rate is read on graduated metering tube Only small flow of water (1 to 2½ gpm) is required to operate unit. Feeder has advantage of closer control of low rates of flow than if they were regulated by metering pump—and there is no danger of breakdown.

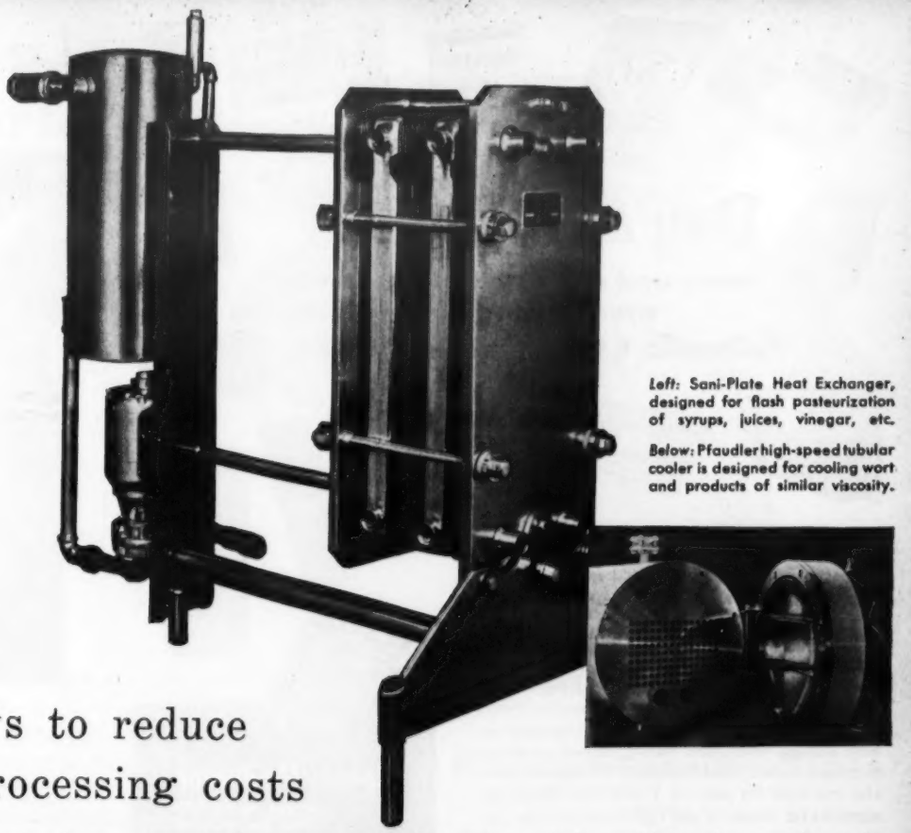
(Feedrators are produced by Fischer & Porter Co., Dept. FP, 400 County Line Rd., Hatboro, Pa. . . . or for more information check FP 3186 on handy form opposite last page.)

Flocculating agents increase filtration rates up to 150%

Of particular interest in treatment of wastes, recently-developed group of synthetic polymers has ability to agglomerate finely-divided solids in liquid suspensions, resulting in considerably higher settling and filtration rates — in some cases, as much as 150% higher. Action is nearly instantaneous and brief mixing period to disperse the agent is generally all that is required.

Flocculating agents consist of large, complex molecules which, when added to aqueous solutions, tend to bind together individual fine solid particles into flocs which quickly settle out. Agents are in form of flaky, dry solids, soluble in water, and generally used as a 0.5 to 1% solution. Amount needed is usually a few hundredths of a pound per ton of dry solids in suspension.

(Aerofloc Reagents are manufactured by Mineral Dressing Dept., American Cyanamid Co., Dept. FP, 30 Rockefeller Plaza, New York 20, N.Y. . . . or check FP 3187 opposite last page.)



Left: Sani-Plate Heat Exchanger, designed for flash pasteurization of syrups, juices, vinegar, etc.

Below: Pfaudler high-speed tubular cooler is designed for cooling wort and products of similar viscosity.

4 ways to reduce your processing costs

1 Pay less to clean your heat exchangers: Unique design of the gaskets in this Sani-Plate Heat Exchanger provides 10 feet of channel across the surface of each plate.

This means fast, thorough heating and cooling of your product. Speed: as high as 6 feet per second!

Flowing so fast, your product is less likely to leave a film or deposit inside the heat exchanger. Hence, you reduce cleaning time and cost. Less time is required for flushing the heat exchanger with cleaning solutions, and it is less frequently necessary to clean plates and gaskets with a brush.

2 Cool 3½ gallons of liquid per second: Capacity of this Pfaudler tubular heat exchanger is a fast 12,600 gallons per hour. Think how you can lower your production costs when you can cool 3½ gallons of liquid every second!

This heat exchanger may be assembled in multiple with two or three others, to give you even greater cooling speeds.

Design of each unit is simple. Stainless steel cooling tubes run straight through the cooler from a perforated end plate. While you maintain the strict sterile conditions of a closed system, you get quick chilling—almost to freezing if you desire.

3 Stop corrosion of storage equipment: A special type of glass in this Chemstor* storage tank prevents damage by corrosive acids. Thus, you save money on maintenance of storage equipment.

Chemstor tanks are built of glassed steel—combining the corrosion resistance of glass with the strength of steel.

You also protect purity of your product by avoiding possibility of metallic contamination.

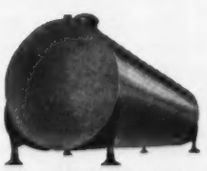
These tanks are available in capacities from 750 to 35,000 gallons.

4 Slash storage costs with glassed Utilitanks*: Here's sanitary, inexpensive storage of liquids. The Utilitank is a vertical glassed steel tank, sturdily built for outside or inside installation.

It is very low in cost—in the larger sizes you pay about 50c for each gallon of capacity. Utilitanks are available from 1000 to 5000 gallons.

Besides keeping your product pure, the smooth, nonadhering glassed steel surface is exceptionally easy to clean.

*Trademark



Chemstor Storage Tank

Utilitank

4 WAYS TO SAVE MONEY are shown on this page. To learn more about each, call your Pfaudler representative or mail the coupon.

THE PFAUDLER CO., Dept. FP-8, Rochester, N. Y.
Please send me information on:
☐ Sani-Plate Heat Exchanger; ☐ Tubular cooler;
☐ Chemstor tanks; ☐ Utilitanks

Name_____
Title_____
Company_____
Address_____
City_____ Zone____ State____

THE PFAUDLER CO., ROCHESTER 3, N. Y.

When inquiring check FP 3188 opposite last page

Day after Day...

more and more nationally famous products are packaged on the

***Automatic* CAMPBELL WRAPPER**

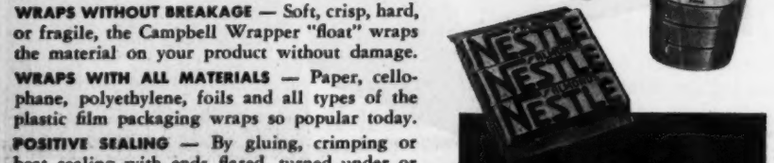
WRAPS ALL SHAPES — Square, round, oval, oblong, flat or irregular . . . the Campbell Wrapper packages them all with equal ease and speed.

WRAPS WITHOUT BREAKAGE — Soft, crisp, hard, or fragile, the Campbell Wrapper "float" wraps the material on your product without damage.

WRAPS WITH ALL MATERIALS — Paper, cellophane, polyethylene, foils and all types of the plastic film packaging wraps so popular today.

POSITIVE SEALING — By gluing, crimping or heat sealing with ends flared, turned under or diamond folded. The Campbell Wrapper is now also available for positive VACUUM Wrapping.

AUTOMATIC FEEDS — and deliveries provide continuous flow packaging geared to coincide with in-line production manufacture or separate operation. Write for complete details and send us a sample of your product.



Speeds Production
. . . wraps up to 300 units per minute!

Cuts Labor Costs
. . . simplified one person operation!

Saves Materials
. . . uses no boards or stiffeners— unless desired!

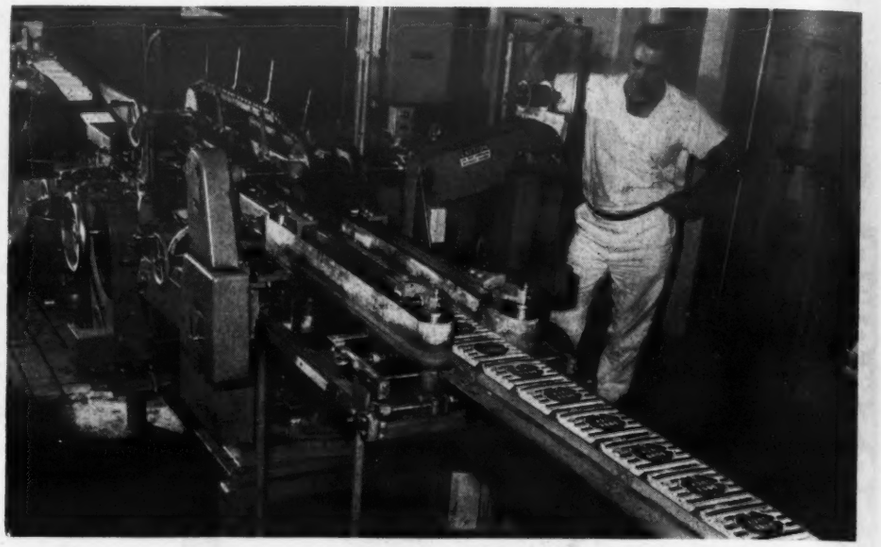
Campbell
WRAPPER

Manufacturers of Aniline and Gravure Presses, Folders, Interfolders, Laminators, Waxers, Embossers, Slitters, Sheeters, Roll Winders, Packaging Machines, Creapers and Tissue Converting Units

55 WEST 42 ST., NEW YORK

Write for full colored 16-page brochure telling all about the Campbell Wrappers and the many different types of products they package.

When inquiring check FP 3189 opposite last page



View of one packaging line at Lever Bros. new Hammond, Ind. plant. Worker is standing next to the tear-tape attachment

easy-open flap tears cleanly

without tangling with folds when wrapping attachment applies tear tape 'across the web'

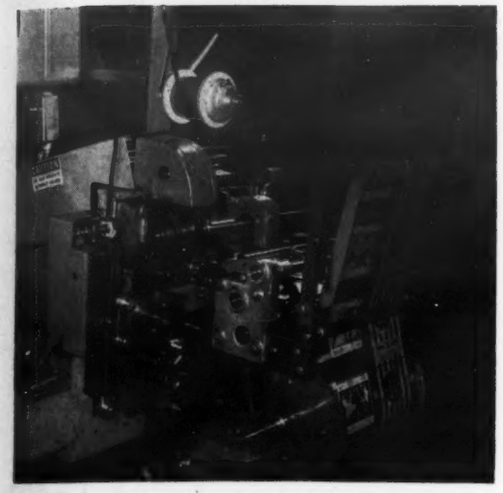
"Design us a new container which will: (1) furnish maximum convenience to consumer; (2) excite favorable consumer reaction; (3) give maximum protection; and (4) cost no more than present package."

These were the objectives given to packaging engineers by Lever Bros. for their Good Luck margarine. These objectives have been achieved in the package pictured on the next page. A tear-tape strip allows easy access to package, and reclosure after opening. The aluminum foil of both overwrap and individual sticks offers maximum protection. The cost objective was met, and a booming sales curve (a 25% rise in sales in the period after introduction of the package) attests to consumer acceptance.

Two technical developments make the new Lever Bros. package possible: (1) a method of applying the convenient tear-tape at high packaging speeds, and (2) achievement of a semi-rigid container using a thin cardboard shell and an aluminum-foil overwrap.

The double laminated-cellophane tape strip is applied by an attachment to standard frozen food wrapping machines. Tape application operation will more than keep up with the 40 to 100 packages per minute wrapped by these machines.

Applying tear-tape to packages of the margarine-type had previously resulted in such difficulties as finding that the tab for tearing the strip (supposed to extend beyond the wrap) became buried in the folds. Also in previous trials, it had been necessary to pull the tape



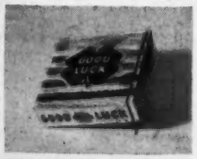
Cellophane tape (white line) feeds from reel at top center, down to narrow belt which carries it under glue applicator, then across web of the foil feeding in from right

through folds of the package, making the opening operation difficult and resulting in a jagged, erratic opening.

These difficulties have been overcome by applying the tape across the web. This method provides a tab which extends beyond the package for easy grasping, and allows the tape to be stripped cleanly, without involving the folds of the package. The tape tears along three sides of the outer wrap, allowing one stick at a time to be removed.

Each stick of margarine is wrapped in aluminum

(*Continued on page* 46)



Getting that tab to extend from package, without getting wrapped in end folds, was challenging job for packaging engineers

Tear-tape pulls around three sides of package. . .

allowing package to be reclosed after one stick is removed

World's Strongest Tape?

Even wrestler "Hard-Boiled" Haggerty can't break it!

"SCOTCH" Brand Filament Tape —super-strong, amazingly shock resistant. Thousands of filaments imbedded in the pressure-sensitive adhesive give up to 500 lbs. tensile strength per inch of tape width. Exclusive "mirror-surface" adhesive gives 100% tape contact—*puts all the tape strength to work*. We'll be glad to send complete information on how it can save money and solve problems for you. Just write.

FILAMENT TAPE

. . . one of more than

300 Pressure-Sensitive Tapes

for Industry, trademarked. . .

REG. U.S. PAT. OFF.

SCOTCH

BRAND

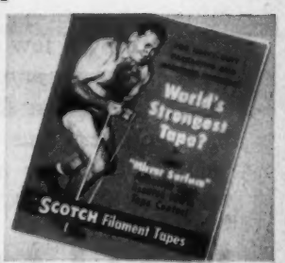
PRODUCT OF 3M RESEARCH

Look what you can do with it!

STOP opening damage to products by using Tear Strip Containers made with "SCOTCH" Filament Tape. Tape cuts carton from inside; eliminates need for knives, cleavers, wedges.

ELIMINATE shifting of bagged goods in transit by unitizing with "SCOTCH" Brand Filament Tape. "Mirror surface" adhesive sticks at a touch. Tape won't cut into bags; holds securely.

PALLETIZE cartons, drums, etc. for easier handling in storage and in transit. Wrap of "SCOTCH" Brand Filament Tape around top layer secures entire load; prevents shifting or slipping in handling.



FREE FOLDER gives complete data on "SCOTCH" Filament Tape: what it is; how it cuts costs in heavy-duty packaging and materials handling. Write on your letterhead to Dept. IF-85.

The term "SCOTCH" is a registered trademark of Minnesota Mining and Manufacturing Co., St. Paul 6, Minn. Export Sales Office: 99 Park Ave., New York 16, N.Y. In Canada: P.O. Box 757, London, Ontario.

When inquiring check FP 3190 opposite last page

"magic carpet"

TO UNIFORM PRODUCT QUALITY

The results may not show on your package label, but W&T Merchen Scale Feeders with continuous weigh-belt for weighing and feeding in one operation — can help to maintain uniform high quality in final product.

Precision scaled, durably constructed and simply controlled, W&T Merchen Scale Feeders deliver minute to minute accuracy whether feeding only a few or many thousands of pounds per hour. In modern food processing operations — premixing, batching and continuous blending — this exacting accuracy is a requisite. As further assurance of uniform quality, the Feeder may be synchronized with other equipment to shut-down automatically in the event of any equipment or supply failure.

If you have a food processing problem requiring uniform feeding and control — automatically by weight — communicate today with Wallace & Tiernan. Your inquiry will receive prompt attention without obligation.

M-22

WALLACE & TIERNAN
INCORPORATED
25 MAIN STREET • BELLEVILLE, N. J.

When inquiring check FP 3191 opposite last page

Lot size	Inspection levels		
	I	II	III
2 to 8	A	A	C
9 to 15	A	B	D
16 to 25	B	C	E
26 to 40	B	D	F
41 to 65	C	E	G
66 to 110	D	F	H
111 to 180	E	G	I
181 to 300	F	H	J
301 to 500	G	I	K
501 to 800	H	J	L
801 to 1,300	I	K	L
1,301 to 3,200	J	L	M
3,201 to 8,000	L	M	N
8,001 to 22,000	M	N	O
22,001 to 110,000	N	O	P
110,001 to 550,000	O	●	Q
550,001 and over	P	Q	Q

Figure 1—This is chart used to select AQL chart to be used in sampling and inspection

GLASS JAR QUALITY CO REALLY WORKS AT

- **Non-measurable defects are defined and classified**
- **Defect classes are evaluated individually**
- **Lot sample scoring is based on clear-cut, statistical system**

An objective system for sampling and inspecting incoming goods for characteristics (or defects), ordinarily not physically measurable, was worked out during and after the war by the military to ensure the quality of their armaments and other supplies. The system was developed statistically, and charts indicating exactly what will qualify a commodity for acceptance were drawn up and presented as Military Standard 105-A. The system can be applied to any sampling program, regardless of product. An example of this is the system's use by H. J. Heinz Co. in its quality program for glass containers.

KARL F. LANG
Quality Control Laboratories
H. J. Heinz Co.
as reported by **FP staff**

Glass container defects can generally be placed in two categories: Those which are "physical" and easily measured, and those which are "visual" and subjective in nature. The physical defects are fairly easy to catch by processors, since glass suppliers must operate within tolerances dictated by specifications, and unacceptable jars are quickly found by measurements with appropriate tools or equipment.

On the other hand, visual defects, while easier to spot, are quite difficult to evalu-

Type of sampling plan	Cumulative sample sizes	Acceptable Quality Levels (normal inspection)					
		0.065		0.65		4.0	
		Ac	Re	Ac	Re	Ac	Re
Single	750	2	3	11	12	45	46
Double	500	1	4	6	22	27	89
	1500	3	4	21	22	88	89
Multiple	150	#	2	0	5	6	15
	300	#	2	2	7	14	24
	450	0	3	4	9	24	35
	600	0	3	7	12	32	44
	750	1	4	9	14	40	52
	900	1	5	12	16	48	60
	1050	2	5	15	18	56	68
	1200	3	5	17	20	64	73

Figure 2—This is a partial reproduction of AQL chart "P", found in Military Standard 105-A

LITY CONTROL RKS AT HEINZ . . .

ate with respect to some measurable scale. Thus, many packers have difficulty reaching an agreement with their glass suppliers as to what constitutes an acceptable container.

The H. J. Heinz Co., using Military Standard 105-A as a guide, has developed a program of glass container quality control which includes an objective evaluation of visual defects, as well as easily-measured physical defects. These visual defects, known as "attributes", have been analyzed and classified, and levels of acceptance for the various classes of defects have been determined. Development efforts have been concentrated on baby food jars, since these are considered the most critical containers.

In the system used by Heinz, the basic unit of measure is the AQL — Acceptable Quality Level. This is defined as the number of defects per hundred units (in this case, jars) which will be permitted in a given lot sample without rejection of that lot. It is also expressed in terms of percent defective. Each class of defects for a particular type of jar is weighted differently, since some defects

(*Continued on next page*)

● Here they are . . . the new resin-based adhesives that help insure safe, "flaps down" delivery for your product.

Take citrus fruits for example. They're packed fast . . . they present a sealing problem because the top of the corrugated case often *curves* with the contour of the contents. One of the line of Swift's highspeed resin-based adhesives was developed specifically for just that kind of tough sealing job.

There's a Swift's case sealer for *your* requirements, too—whether your problem is in moisture resistance, speed of set, a difficult shape or unusual carton stock. Or *most important,* maybe you need a fast, secure and dependable seal . . . for "flaps down" arrival.

Why not write for details on Swift's Highspeed Resin Adhesives or *any* of Swift's adhesive products for: Labeling • Top & Bottom Sealing • Palletizing • resin-based, water resistant, or regular Case Sealers.

SWIFT'S

CASE SEALING ADHESIVES

. . . they're resin-based for quick set!

ONE TRIAL IS BETTER THAN A THOUSAND CLAIMS

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TO SERVE YOUR INDUSTRY BETTER

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Please send further information on the following products:

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☐ REGULAR case sealing adhesive ☐ HOT PICK-UP GUMS
☐ EVERTITE for glass labeling

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*City*_____ *Zone*____ *Prov.*_____
*Your name*_____

When inquiring check FP 3192 opposite last page

The COLSON LIFT-JACK SYSTEM
MAKES LIGHT OF HEAVY LOADS

Through processing, in and out of storage, on and off freight cars or trucks, the COLSON Lift-Jack with wood or steel semi-live skids speeds the flow of goods—let's 1 man easily do the work of 2. It's simple work to engage the jack, transport the load, release the load and use the jack to move another skid.

Whatever your requirements, it's wise to consult COLSON, maker of the nation's most varied line of materials-handling products.

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Casters • Hand Trucks • Lift Jack Systems
Hydraulic, Electric and Mechanical Power Lifts and Transports

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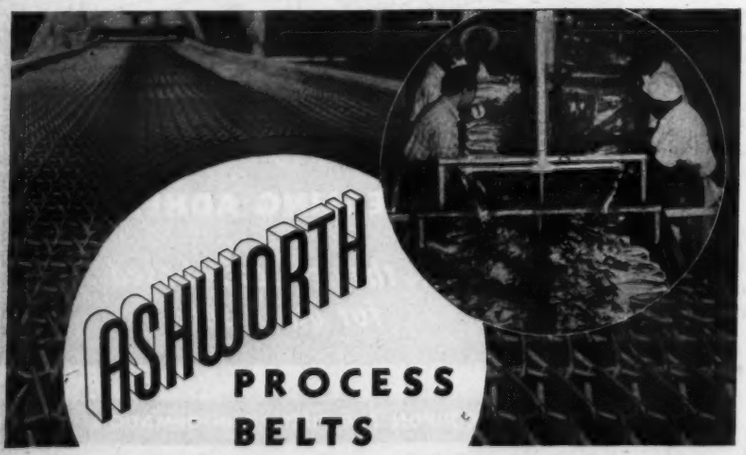

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(*Continued from preceding page*)

will obviously be more serious than others.

Accordingly Heinz has defined three classes of defects:

Class I Major—those which judgment and experience indicate are only acceptable at an absolute minimum level

Class II Major—those which could render the jar or its contents unusable

Class III Minor—those which are unattractive, but will not reduce usability of product

An important consideration is that both major defects can result in unfavorable consumer reaction.

The actual numerical values given to the AQL were worked out between Heinz and its various glass suppliers, based mainly on experience. This point is important because this evaluation is essentially subjective and the AQL values must of necessity be somewhat arbitrary. Mutual satisfaction concerning these basic numbers is therefore a must. In this respect, Heinz found their glass suppliers most cooperative.

The AQL values which Heinz has assigned to baby food jars are as follows:

Class I Major	0.065%
Class II Major	0.65 %
Class III Minor	4.0 %

These values are used by referring to a chart in Military Standard 105-A. The chart indicates (for the given AQL value) exactly what number of defects found in a sample inspection will qualify a lot for acceptance or rejection. A portion of one of these charts is reproduced on page 43 (Figure 2).

This chart is only one of many in the Standard. Selection of the proper chart is governed by an "indexing" chart in the Standard (Figure 1), which relates lot size to the proper AQL chart.

As an example, the lot size for Heinz railroad shipments of baby food jars falls in the 110,001 to 550,000 category. Referring then to Figure 1, it is seen that chart "P" is the AQL chart to be used in this instance (The "inspection level" most commonly used is No. II). This is the chart which has been partially reproduced on page 43 (Figure 2).

Three types of sampling plans are possible: single, double, and multiple. The plan used by Heinz is the double, wherein a second sampling is made if the first produces doubt. With the single plan, only one sampling is made, and with the multiple, three or more samplings (if needed).

As indicated on the AQL chart (Figure 2), the first sample taken from the lot will consist of 500 jars. These are judged and scored in each of the three defect categories. For instance, it can be seen on the chart that only one Class I defect is acceptable in this first sample. If four are found, the entire lot will automatically be rejected. If two or three are found,

VACUFLOW
Dustless
POWDER FILLING

Vacuflow powder filling equipment operates on a principle of vacuum feeding, instead of pressure, to pack powder into a container.

Air is removed from the container to create a vacuum which draws a measured quantity of powder from the hopper. There is no problem with dust control, since the unique Vacuflow method simply does not involve air currents that cause dust.

Semi-automatic models are available for filling containers ranging from the tiny talcum box up to and including 100 lb. paper bags and 200 lb. drums. Rotary models are available for automatic production of 5 lb. sizes or less at speeds of 45 to 300 per minute.

Pneumatic is the one manufacturer in a position to furnish machines for making up complete production lines. Units are available for air cleaning, powder and liquid filling, capping and labeling a wide range of bottles, cans or jars.

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67 Newport Ave., Quincy 71, Mass.
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PNEUMATIC

When inquiring check FP 3195 opposite last page

an additional thousand samples (see Figure 2) must be taken and scored. For the entire 1500 jar sample, three or less Class I defects are acceptable, and four or more will reject the lot. This procedure holds true for each of the three categories. Any one of the three classes may cause rejection or resampling.

Some of the defects in the several classes which Heinz uses are listed below:

Class I—filaments, tramp glass, and certain overpresses and blisters

Class II—serious checks, chipped or bruised finishes, stones, knock-outs, out-of-shapes, thin spots, and others

Class III—pressure marks, body marks, dimpled shoulders, washboard marks, blank seams, color streaks, and others.

(Military Standard 105-A, "Sampling Procedures and Tables for Inspection by Attributes", can be obtained by remitting 30c direct to Superintendent of Documents, US Government Printing Office, Washington 25, D. C.)

Eliminates large stocks pre-printed labels — imprints as they're needed

Automatic unit handles nearly any type label at rate of 150 per minute

Fanfolded labels are supplied for easy storage

Large inventories of preprinted labels can be eliminated by automatic imprinting unit which supplies printed labels as needed. Handles most types of label stocks — gummed, ungummed, heat-seal, or pressure-sensitive. Tags can also be imprinted easily.

Unit prints from metal logos or sticky back rubber mats at rate of 150 labels per minute. Type sizes range from 6 to 36 point. Label sizes from 1" x 5/8" to 6-5/16" x 4-3/8" can be handled. Operation is fully automatic, type changes are made easily in matter of seconds. Unit comes equipped with cut-off knife which cuts off each label after imprinting, and drops it into a hopper.

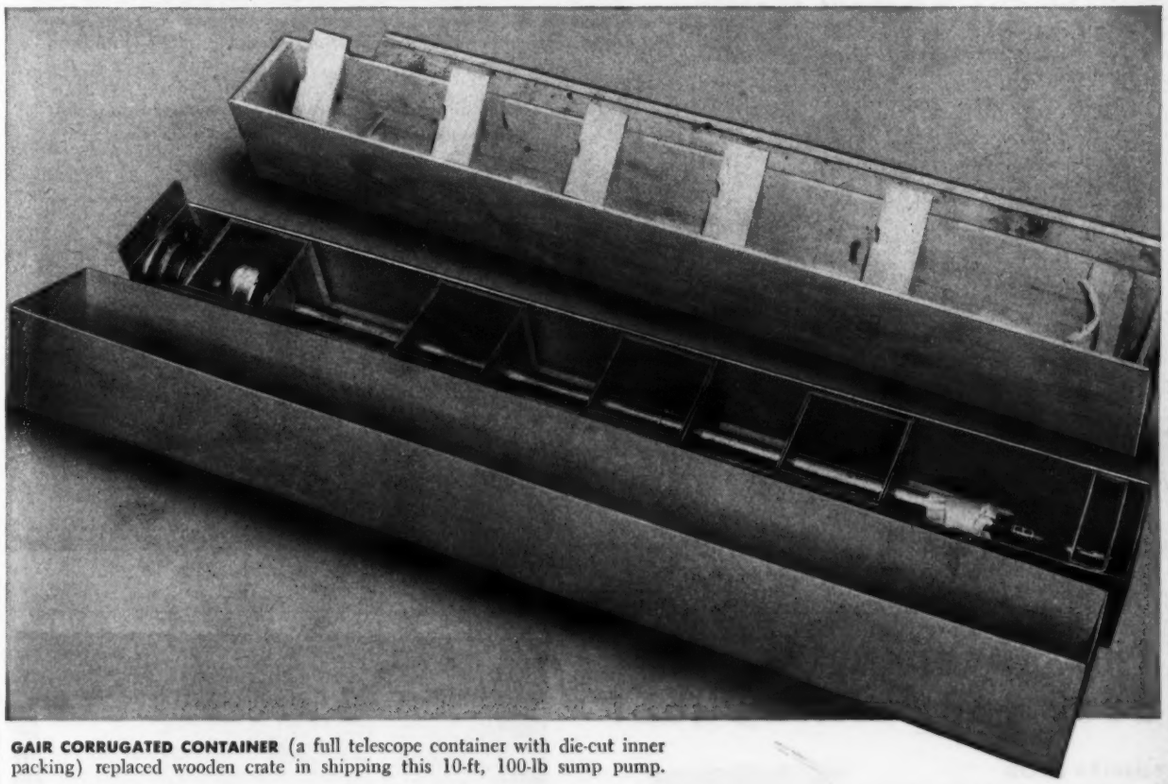
(Roto Kimco imprinting unit is produced by A. Kimball Co., Dept. FP, 307 W. Broadway, New York 13, N.Y. . . . or for more information check FP 3196 on handy form opposite last page.)

NEXT MONTH

Develop new markets for two conventional products by slight alteration of processing, packaging techniques . . . How-to-do-it shown in September

Switching FROM WOOD TO CORRUGATED

SAVES PUMP FIRM $4.50 A SHIPPING CONTAINER



GAIR CORRUGATED CONTAINER (a full telescope container with die-cut inner packing) replaced wooden crate in shipping this 10-ft, 100-lb sump pump.

Production men at Detroit's Penberthy Injector Co. are wearing big smiles since they switched from wooden crates to Gair corrugated shipping containers.

Product involved was their ten-foot sump pump that tips the scales at more than 100 pounds. That's why Penberthy's shipping department wasn't sure at first that corrugated was strong enough for the job. Gair convinced them by a number of test shipments to various parts of the country — *no damage!*

Now one man packs thirteen complete containers an hour — it used to take two men that long to turn out nine to ten containers. This represents a savings in packing and materials of $4.50 per unit. Add the fact that the new container is 42 pounds lighter — three of them can be shipped for the price of two wooden crates — and you see why Penberthy has closed down its crating shop.

Interested in knowing what suggestions we might have for improving *your* packing and shipping program? Call your nearest Gair plant.

YOU'RE LIVING NEXT DOOR TO THE EXPERT

GAIR CONTAINER PLANTS: Atlanta, Ga. • Cambridge, Mass. • Cleveland, Ohio • Holyoke, Mass. • Jackson, Miss. • Los Angeles, Cal. • Martinsville, Va. • New Orleans, La. • No. Tonawanda, N. Y. • Philadelphia, Pa. • Plymouth, Mich. • Portland, Conn. • Richmond, Va. • Syracuse, N. Y. • Teterboro, N. J.

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SHIPPING CONTAINERS

FOLDING CARTONS • PAPERBOARD

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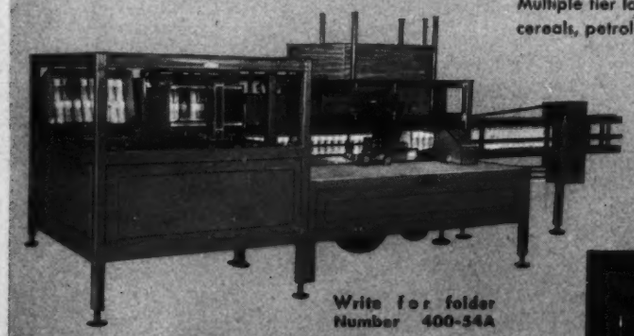
Packomatic
PACKAGING MACHINERY

Custom Engineered
TO CUSTOMER'S REQUIREMENTS

TWENTY OR MORE CASES PER MINUTE ON THIS CUSTOM ENGINEERED MACHINE. Depending upon the size of the unit to be loaded, proportion, and packing arrangement of the case, speeds of 20 per minute are possible. Available as a single tier end-opening case loader for low speeds, and with horizontal grouping mechanism for higher speeds on the same type of case.

Multiple tier loading as depicted is used to pack such items as breakfast cereals, petroleum products, synthetic detergents, waxes, and so forth.



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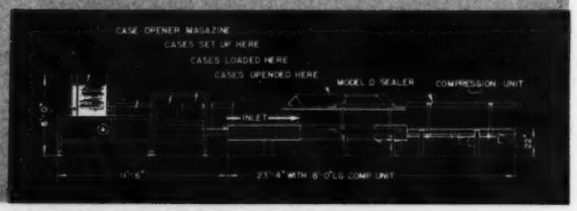
CASE OPENER AND LOADER



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This inexpensive filler does your filling job!

SIMPLEX FILLER
TOP QUALITY MANUFACTURE

- Handles liquids and semi-solids!
- Fills 25 to 80 bottles, jars or cans per minute!
- Adjustable 2 oz. to gallon!
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Write for circular on this fully automatic Model T (2 pistons) and other Simplex fillers.

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How to Improve Your Packaging Operations..

SEND FOR the new Paisley 4-page Packaging Adhesive Guide. It contains valuable information about the most modern Adhesives ever designed for specific sealing operations *in the packaging field!* Also gives facts on Technical Service Bulletins, our scientific laboratory control methods of manufacture and the Paisley Adhesive Operation Data Sheet. All this valuable information and service is FREE. Ask for your Packaging Adhesive Guide today!

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When inquiring check FP 3200 opposite last page

Statement that cellophane-wrapped bread loses riboflavin attacked by bakers

"Conclusions from data obtained by the American Institute of Baking, plus data which has been published from other reliable sources, indicate that only under conditions much more severe than we might expect to find in commercial practice, is there any appreciable loss of riboflavin due to exposure of enriched bread to light." This statement was issued by the American Baking Institute, Chicago, in response to recently published studies of loss of riboflavin in bread wrapped in waxed paper vs. cellophane. Reports of these latter studies indicated that commercial printed opaque waxed paper is "approximately twice as effective in reducing degradation of riboflavin by light as cellophane."

In the report from AIB Laboratories, studies of scientific literature and tests at AIB indicated that significant losses of riboflavin were obtained only when the bread had been exposed to direct sunlight for prolonged periods of time — conditions which made the bread unsaleable, since the heat of the sun caused so great a loss of moisture that the inside of the wrappers was wet and the bread shrunken.

Exposure to light encountered in commercial distribution of bread causes no significant loss of riboflavin, according to AIB tests of commercial bread taken from grocer's racks in 51 cities. "Any difference between clear cellophane and waxed paper as a protection from vitamin loss due to light is too slight to warrant any advertising claim," concludes the AIB report. "In either case," the report says, "the loss is nutritionally insignificant."

(Original report, "The Retention of Riboflavin in Commercially Wrapped Enriched Breads", 12 pages is published by Foster D. Snell, Inc., Dept. FP, 29 W. 15th St., New York 11, N.Y.)

(Special bulletin of the American Institute of Baking, "Breadwraps and Enrichment", 4 pages, is published by the American Institute of Baking, Dept. FP, 400 E. Ontario St., Chicago 11, Ill.)

Easy-open Flap

(*Continued from page* 41)

foil, then the four quarter-lb sticks are wrapped in a four-color outer wrap.

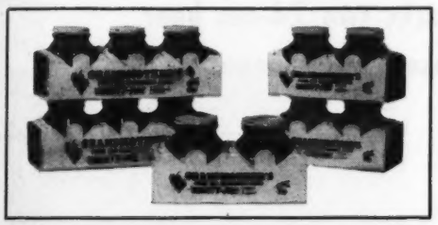
(Model FF wrapping machine and cross-tape unit are manufactured by Package Machinery Co., Dept. FP, East Longmeadow, Mass. . . . or for more information check FP 3201 opposite last page.)

(Package construction was designed by Reynolds Metals Co., Dept. FP, 2500 S. 3rd St., Louisville, Ky. . . . or for more information check FP 3202 on handy form opposite last page.)

Package NEWS-OF-THE-MONTH

Tips and pointers . . . what's new in products and package design . . . and "where-to-go" for more information

A pull string opens this frozen food package, which is slated for test marketing soon. The Snow Crop Division of Minute Maid is introducing the new container with strawberries packed at its Lynden, Washington plant. When housewife pulls, string tears through label and scores the fibreboard. Then she breaks off the top. The 10-oz package is a product of Sefton Fibre Can Co., of Container Corporation of America, Dept. FP, 3200 Big Bend Blvd., St. Louis, Mo. . . . or check FP 3203.



Multiple package for glass containers has patented design with built-in dividers. Needs no overwrap, and jars do not fall out even if package is overturned. Package makes stacking easier, protects against breakage. Available for multiples of two, three, or more containers.

Package can be filled by hand, or a jig is available for carton set-up. Multiple package is the development of Alford Cartons Div. of Continental Paper Co., Dept. FP, Ridgefield Park, N. J. . . or check FP 3204.

"Pony" size bottles of champagne, sparkling Burgundy have been christened as "Gigolo", and are being introduced by Meier's Wine Cellars, Silverton, Ohio. Holding 6 2/5 oz, they just fill two champagne glasses, and are exact miniatures of the large fifth bottles. Foil neck bands in colors indicate the types of sparkling wines in each bottle. The four-bottle gift carton also doubles as counter display. Gigolo bottles are manufactured by Owens-Illinois Glass Co., Dept. FP, 14 & Adams St., Toledo 1, O. Check FP 3205.

Pie in a package requires no cooking or baking. Egg white filling mix and graham cracker crust are included, ready for the making. "Angel Pie" is the name of the ready-to-make pie, which now is sold in two flavors — lemon and vanilla. Manufacturer of Angel Pie is 6 O'Clock Foods, Inc., Norristown, Pa.

"Another Product Safely Shipped in Inland 'protection-eered' Containers"*

"POPSICLE" CONFECTIONS LEAD SUCH Sheltered LIVES

"POPSICLE" confections never find out about the big, cruel, unsanitary world about them. From the spotless plant that makes their flavorings, to their delicious destiny on a consumer palate, "POPSICLE" confections are strictly pampered (as all good little food products should be).

It is only natural that the Joe Lowe Corporation, the originator and owner of the famous "POPSICLE" and other "SICLE" confections, should be particularly fussy about the pails they use to ship concentrated flavorings to licensees throughout the world. That's why it specifies Inland Steel *lined* containers. Inside each Inland 5-gallon pail are the makings of 10,000 mouth-watering frozen treats . . . cradled in a special lining that keeps them in blissful ignorance of nasty things like contamination. Even when a "POPSICLE" pail gets pounded, the container absorbs the shock and the contents stay pure and tasty.

The big-name brands know that pampering pays off for fine food products. And through the years they've entrusted their precious quality to Inland "protection-eered" containers. The full story, applied to your problems, is well worth writing for. Address our Mr. Robert Boecher, Room 244-E.

"POPSICLE" is the Registered Trade Mark of the Joe Lowe Corporation, New York, N.Y.

"It's Better to Ship in Steel"

**the right container, with the right lining for your product*

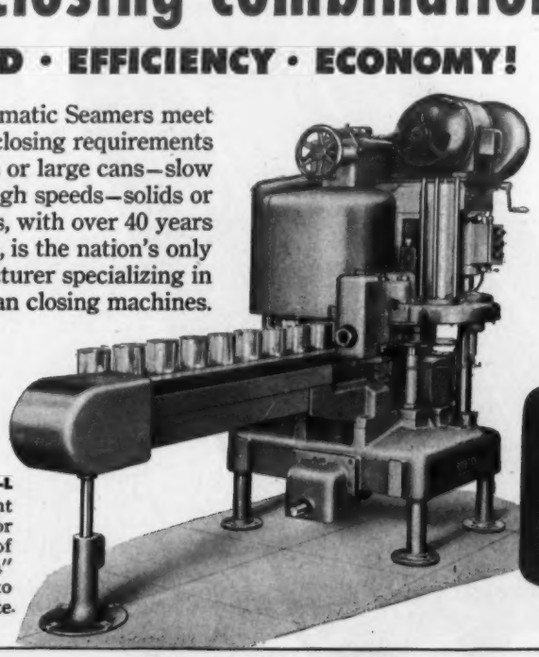
INLAND **INLAND STEEL CONTAINER COMPANY**
Division of Inland Steel Company
6532 South Menard Avenue • Chicago 38, Illinois
Plants: Chicago • Jersey City • New Orleans

When inquiring check FP 3206 opposite last page

Only ANGELUS offers this can closing combination

SPEED • EFFICIENCY • ECONOMY!

Angelus Automatic Seamers meet any round can closing requirements —small cans or large cans—slow speeds or high speeds—solids or liquids. Angelus, with over 40 years experience, is the nation's only manufacturer specializing in can closing machines.



Model 60-L
High-speed, straight line feed seamer for spill-free closing of round cans 2⅛" to 4¼" in diameter—up to 400 cans per minute.

Investigate
the advantages of low cost production, low cost investment, and low cost maintenance with Angelus Automatic Seamers.

Write today
for complete details on models and an Angelus Engineered Application Recommendation.

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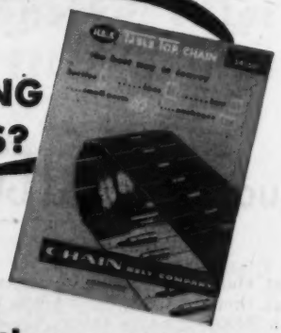
GOT CONVEYING PROBLEMS?



NEW TABLETOP catalog has the answers...

on conveying cans, bottles, jars, cartons, or parts of small size. Illustrated. Describes all advantages of TableTop's® simplicity...how it lowers maintenance cost...speeds handling...helps reduce conveyor costs. Also sections on REX® FlexTop, Rex Crescent Top, Rex PlateTop and Rex Double-Flex Chains. Mail coupon for your copy

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When inquiring check FP 3208 opposite last page

Another First!

HEAVIEST DUTY PISTON FILLER EVER BUILT

Hope — Established Since 1908

★ **RISING TABLE** Infinitely adjustable. No cam rails or steps

★ **QUANTITY CONTROL** One point adjustment, vernier on each piston

★ **NO CONTAINER—NO FILL** Save product and clean-up time

★ **ADJUSTABLE HEAD** Filling head on heavy duty jack screws

★ **NEW JAR FEED** Straight push with up and over action

★ **JAR CLEANER** Double turnover jar cleaner—optional

IDEAL FOR COLD PACK PEANUT BUTTER, MAYONNAISE JAMS, JELLY, PRESERVES AND VISCOUS PRODUCTS

Write for Information and Catalog 45

FASTEN TO LETTERHEAD AND MAIL TODAY!

HOPE MACHINE CO.
9400-20 STATE RD. PHILA. 14, PA.

When inquiring check FP 3209 opposite last page

High speed caser at Anheuser-Busch easily handles over 500 cans per minute

Packs two 24-can beer cases simultaneously

Only one operator needed — for opening case flaps on machine infeed

Problem: Ordinary can casers were not considered adequate for Anheuser-Busch's new Los Angeles brewery. Production has reached 525 cans per minute on its two lines — filling and canning 12 oz flat-top beer cans. These are either cased directly 24 to a case or packed in 6 and 12-can "take-home" cartons. The high production rates required a high-speed caser for the direct cased cans.

Solution: Duplex casers, which simultaneously pack two 24-can cases, were installed on both lines. Machine consists of a case feeder and case packer, can be operated by one man, whose principal duty is to open case flaps on infeed. Casing

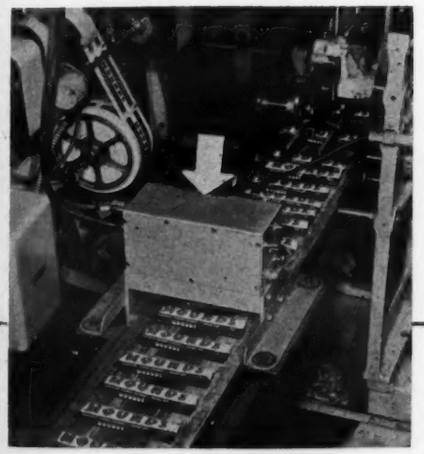
Steel fingers on duplex caser guide 24 beer cans into each case after it is lifted into loading position

unit shunts cans from conveyor into 12 lanes, (6 for each carton).

When lanes are full, release lever is actuated, cans drop into empty cartons. Drop is guided by steel fingers around each can. Empty cases are pneumatically lifted into loading position, lowered to conveyor level when loaded.

Results: Machine adequately handles high production rates at new brewery. In fact, caser is capable of speeds to 600 cans per minute, should future line changes require higher speed.

(Model 830 Duplex Packers are a product of Standard-Knapp, Division of Emhart Mfg. Co., Dept. FP, Main St., Portland, Conn. . . . or for more information check FP 3210 on handy form opposite last page.)



Electronic metal detectors require little maintenance after 6 years' use at Peter Paul

Peter Paul, Inc., Naugatuck, Conn., makers of Mounds and Almond Joy bars, were one of the first users of electronic metal detectors to guard quality in their plant. Here's a photo of one of the many electronic units which have been in operation since 1949. Detectors are completely automatic, detect all types metal — both magnetic and non-magnetic. Units are easy to maintain, have required little repair during the six years of use, according to Peter Paul management.

(Brilmayer electronic metal detectors are products of E. W. Brilmayer Laboratories, Inc., Dept. FP, 86 Fulton St., New York 38, N. Y. . . . or for more information check FP 3211 on handy form opposite last page.)

fruity...

salty...

or creamy...

Your specialty items look as good as they taste in Continental tailor-made packages

Is your product listed here?

Let us show you containers designed for:

brown bread	glazed fruit	plum pudding
candy	ice cream mixes	popcorn
date bread	nut bread	potato chips
fountain syrups	nutmeats	pretzels
fried noodles	nut butter	shoestring potatoes
fruit cake	peanuts	syrups

and many other food specialties

Persuading the casual shopper to buy your out-of-the-ordinary foods calls for out-of-the-ordinary packaging. At Continental, our designers and lithographers are past masters at making your package look as colorful and tempting as its delightful contents. Let us give you all the attractive cans you need, exactly when you need them. And if you'd like help with research or engineering, you'll find it available at a moment's notice — suited to your individual problems. Call Continental soon. You'll be glad you did.

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PACIFIC DIVISION: Russ Building, San Francisco 4

When inquiring check FP 3212 opposite last page

CONVEYING ELEVATORS

IDEAL FOR HANDLING FRAGILE FOOD PRODUCTS

Manufactured to meet your exact requirements . . Completely flexible . . for almost any length of horizontal or vertical travel . . . and will discharge products at one or multiple points.

Highly sanitary . . . all portions that come in contact with the product are stainless steel. Also available in galvanized and cold rolled steel.

Manufacturers of:

- ☐ Vibra Flex Conveyor
- ☐ Vibra Flex Feeder
- ☐ Bucket Elevators
- ☐ Vibra Flex Grading Tables
- ☐ Nut Shelling Equipment

Request Bulletins

MEYER MACHINE CO.

"Designers and Manufacturers of Conveying and Processing Machinery"

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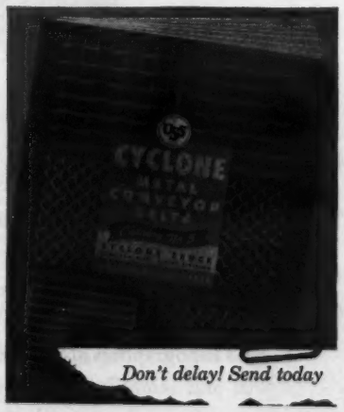
When inquiring check FP 3213 opposite last page

PROCESSING PROBLEMS?

Then you need this FREE BOOK

- All the facts on the largest line of metal processing belts available
- Includes photographs, specifications on each type
- Shows Cyclone Belts on the job in many applications
- Describes various belt accessories
- The kind of book you'll want for reference.

CYCLONE FENCE DEPARTMENT
AMERICAN STEEL & WIRE DIV., UNITED STATES STEEL CORP.
WAUKEGAN, ILLINOIS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK



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FLAT WIRE · FLEX-GRID

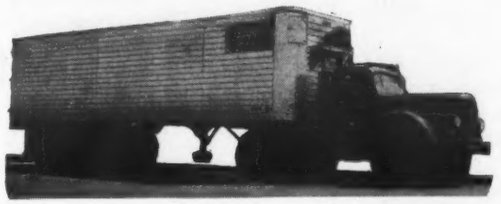
Cyclone Fence, Dept. K-85
Waukegan, Illinois

Gentlemen:
Please send me—without charge or obligation—your big, illustrated Catalog #5.

Name.....
Company.....
Address.....
City.....State.....

UNITED STATES STEEL

When inquiring check FP 3214 opposite last page



Baggett always knows location and condition of every truck

Visible filing system keeps tab on 475 units — permits quick action that prevents delays of perishable shipments

When a company can tell exact location and condition of each of its 475 trucks, it is possible to avoid or cope with any delays that threaten perishable shipments. Baggett Transportation Co., Birmingham, Ala. keeps such control over its fleet by means of a visible dispatch control system. A large number of the Baggett trucks are used to transport foods from a central distribution center to 46 different points over runs averaging 225 miles.

The visible filing system utilizes 40" wide clear plastic pockets. Board is so arranged that a number of colored cards, each representing a different day of the week, keeps track of each truck. Cards are used to post trip data that comes in by means of direct teletype service maintained with each of 12 stations through Alabama, or by telephone. Each card has space for a variety of information.

Visible margin always contains unit identification, driver, terminal to and from, manifest number, and date. Cargo control is exerted through copies of bills and manifest retained at dispatching control center. The "central dispatch" manifests carry numbers. They are currently posted from the reports and assembled by originating and destination terminals. Cards remain under section showing originating terminal until units (trucks) are checked

Day dispatcher Ann Logan receives information that will be recorded on card assigned to unit reporting

through central control station. The different colored cards become invaluable at this point. Overdue units stand out prominently and a teletype report is transmitted to originating and destination terminals. A new card is made out and placed on a board for units reported overdue, encountering breakdowns, or otherwise delayed. Carrier card and overdue card remain on board until unit reports into control station or at destination. 'Round the clock tab is kept on all equipment. Shipments arrive in fresh and perfect condition, as threatened or actual delays are dealt with immediately.

(Sched-U-Graph visible record system is a product of Remington Rand Inc., Dept. FP, 315 Fourth Ave., New York 10, N. Y. . . . or for more information check FP 3215 on handy form opposite last page.)

Undersize slices separated in vibrating run of 10' – up to 97% efficiency

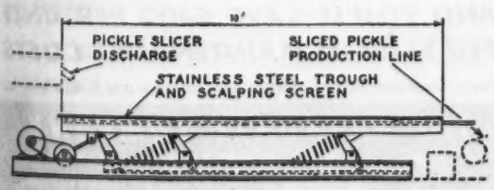
Machines now in use by pickle packers to be adapted for vegetables, fruits

Numerous pickle packers have slicers delivering up to 300 bu/hr. However, problem of removing undersize slices and ends by manual methods prevents taking full advantage of this capacity.

Now, a slice-separating machine brings this operation up to desired high speeds and eliminates about 97% of small, undersized slices in as little as a 10' run. Sliced product feeds directly from slicer to vibrating screen. Material falling through screen deck is conveyed along trough to disposal container. Slices move along vibrating screen deck at 30 to 40 fpm.

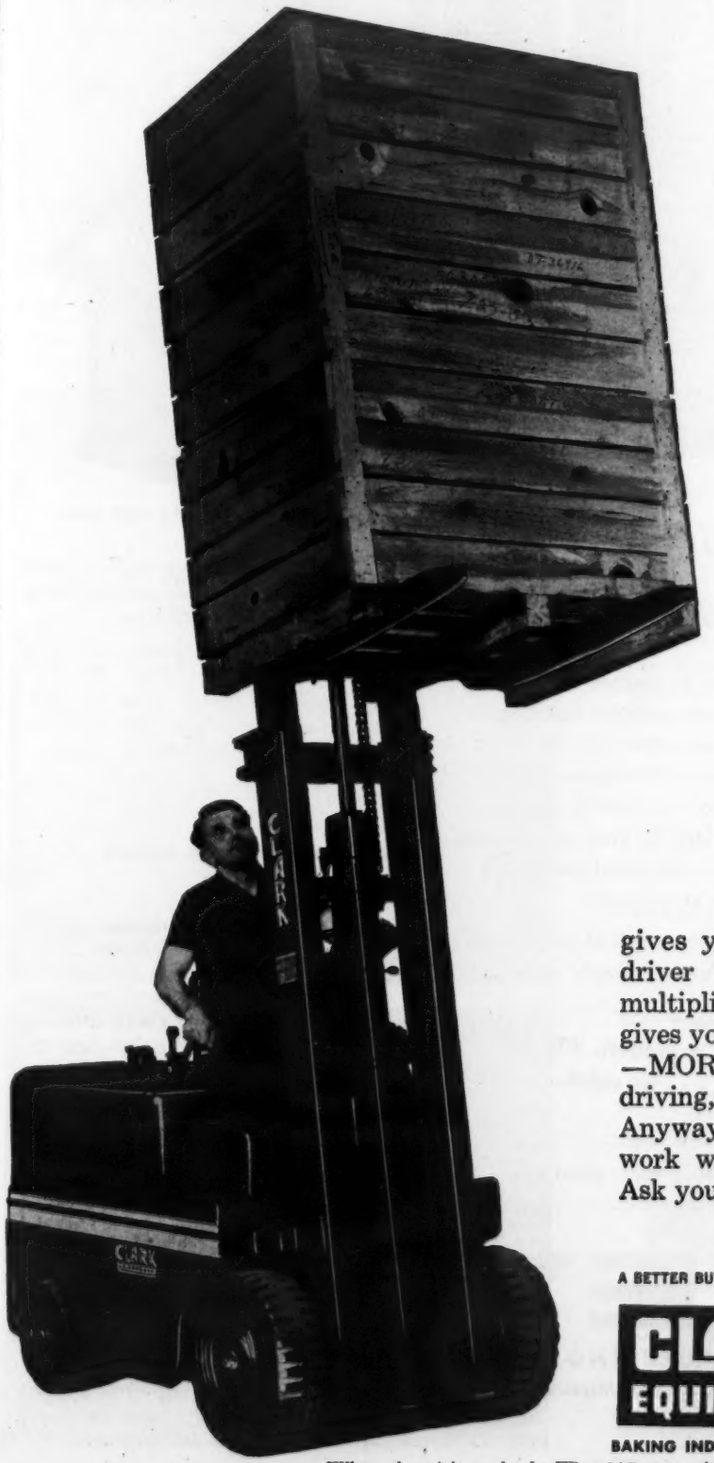
Vibration introduced into the machine by eccentric drive is largely absorbed by counter-balance frame, simplifying conveyor supports. Only 3 hp motor is required for drive. Present applications are in the pickle packing plants, although plans are underway to adapt this unit for removing pits and scraps from other vegetables and fruits.

(Food slice separating machine is a development of Stephens-Adamson Mfg. Co., Dept. FP, 12 Ridgeway Ave., Aurora, Ill. . . . or check FP 3216 opposite last page.)



Vibration induced into machine by eccentric is removed by counterbalance frame

NOW...MORE WORK with HYDRATORK!



Clark Carloader sets new standards for the industry!

NEW! Increased engine power gives you faster acceleration, faster travel speeds, power reserve for extra work-loads.

NEW! Faster lifting speeds. Lifting speed when loaded has been increased to 37 feet per minute.

NEW! Improved Hydratork Drive has greater gear reduction to convert higher engine speeds for more power.

NEW! Top gradeability. The most efficient operating powertrain on the market today, provides power when you need it to climb the steepest grades.

No clutch—no gears to shift gives you better maneuverability, less driver fatigue—MORE WORK! Power multiplication through torque converter gives you extra power, smooth acceleration —MORE WORK! No clutch means easier driving, less down-time—MORE WORK! Anyway you look at it . . . you'll get *more* work with Clark's Hydratork Carloader. Ask your local Clark dealer for details.

A BETTER BUY WITH LOCAL SUPPLY—*Genuine Clark Parts*

CLARK® EQUIPMENT

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CLARK EQUIPMENT COMPANY
Battle Creek 15, Michigan

BAKING INDUSTRY EXPOSITION—OCT., 1-6th—ATLANTIC CITY

When inquiring check FP 3217 opposite last page

Call Alvey First

FOR COST-SAVING CONVEYOR CONSULTATION

Here's your opportunity to explore *all* the advantages of a modern package handling system... *before* you buy. Our team of experienced ALVEY conveyor engineers will work with your own technical staff to develop a plan that is precisely right for your requirements. They'll show you how it will speed production and save man-hours in your plant.

To have an ALVEY engineer call at your plant for a preliminary conference, simply write us.

Every time you MANhandle a product, you add to its cost... *without* adding to its value.

So, for profit's sake... convey your products.

ALVEY

ALVEY CONVEYOR MANUFACTURING COMPANY

9307 Olive Street Road, St. Louis 24, Missouri

Branch Offices in Principal Cities

196

When inquiring check FP 3218 opposite last page

Takes shocks out of stops

Fluid torque multiplier for gasoline or electric motors under 10 hp eliminates shock of starting or stopping.

It allows engines to assume full speed and hp regardless of the load. Used with a multiple bank of electric motors, unit eliminates need for synchronization.

Torque converter for small motors

(Fluomatic is a product of Little Beaver Industries, Dept. FP, Willoughby, Ohio. . . . or for more information check FP 3219 on handy form opposite last page.)

Drums become mixers using rotator

Able to mix, tumble 1000 lb in original container

Floor model has been developed for rotating drums with loads up to 1000 lb. It can be used for agitating, mixing, and tumbling material in its original container.

Idler wheels can be adjusted for various size drums. Right angle geared-head, ½-hp motor can be supplied to meet any electrical specifications with drum rotating speed of 10 to 30 rpm.

(Rotator is a product of Morse Mfg. Co., Dept. FP, 727 W. Manlius St., East Syracuse, N. Y. . . . or for more information about manufacturer's product reader may simply check FP 3220 on handy form opposite last page.)

Magliner Magnesium Hand Trucks Deliver

maximum performance

with minimum weight!

Magliners are America's fastest selling hand trucks because they deliver greater work output ...last longer...weigh less! With Magliners, your men push the load, not the truck . . . save time, effort, money with every step! Made of light, strong magnesium, Magliners weigh only ¼ as much as ordinary hand trucks, yet are equal *or superior* in strength and payload capacities. Of all-mechanical construction, Magliners give added years of low-cost, dependable service.

Here's an extra advantage you get only with Magliners! You can now custom design the Magliner hand truck you want from more than 200 available combinations. Bulletin HT-101 tells how. Send for your copy today!

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When inquiring check FP 3221 opposite last page

Now You Can ELIMINATE NOXIOUS GASOLINE FUMES!

by converting FORK LIFT TRUCKS to L-P GAS with

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L-P GAS GIVES PERFECT COMBUSTION!

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When inquiring check FP 3222 opposite last page

Heavy pallets and skids moved by one man without truck

Use of double trackage system eliminates waiting for fork truck to move loads

Uses: To move heavily-loaded skids to shipping, storage, or along assembly lines. Trackage can be installed into loading docks, bridges, scales, elevators, etc.

Features: Trackage is placed flush in floor with tops of rollers just above heavy steel safety treads. Foot and truck traffic can cross at any point.

Trackage system allows one man to move heavily-loaded skid. Turntable in foreground is used to change direction of skid

Description: Rolling function of system is performed by trackage which consists of a series of rollers containing easy-running sealed ball bearings. Load is carried on special flat-bottomed dolly which glides easily over track rollers when pushed by one man. Skid bridges two parallel rows of trackage. Legs of skids are actually runners, one on each side, which slide over rollers of trackage.

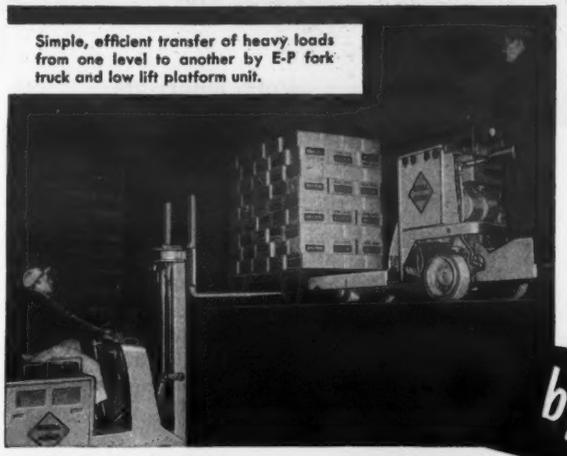
(Epco Double Trackage System is a development of Engineering Products Co., Inc., Dept. FP, 122 S. Michigan Ave., Chicago 3, Ill. . . . or for more information check FP 3223 opp. last page.)

Aids selection of elevator buckets for use in new or revised systems

Illustrated folder presents detailed information on high speed, high strength elevator buckets. Charts, diagrams, and tabulated data aid selections for use in modernizing existing facilities or designing new systems. Features include low front lip, high bucket ends, and smooth interiors.

Folder No. 2548 — on HS elevator buckets is issued by Link-Belt Co., Dept. FP, 307 N. Michigan Ave., Chicago 1, Ill. When inquiring specify FP 3224 on handy form opp. last page.

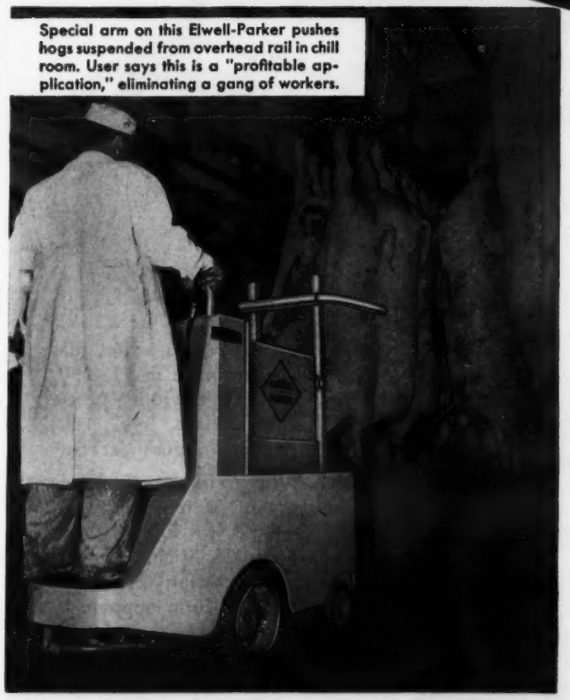
Simple, efficient transfer of heavy loads from one level to another by E-P fork truck and low lift platform unit.



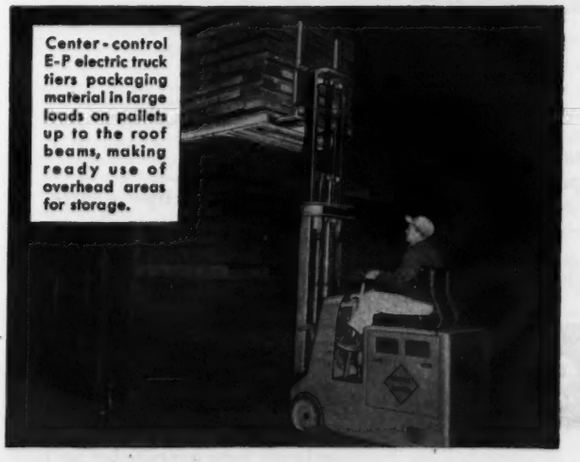
The Difficult Made Easy

by ELWELL-PARKER Trucks

Special arm on this Elwell-Parker pushes hogs suspended from overhead rail in chill room. User says this is a "profitable application," eliminating a gang of workers.



Center-control E-P electric truck tiers packaging material in large loads on pallets up to the roof beams, making ready use of overhead areas for storage.



Sixteen years ago, one of America's most prominent meat packers installed an Elwell-Parker electric truck. Today 50 such trucks are the keystone of their model materials handling system.

In 1936, swarms of hand truckers created confusing bottlenecks, making many operations difficult. Now quiet, fume-free Elwell-Parker electrics insure orderly, easy production. They handle far larger loads more quickly with a minimum of costly manpower. High stacking by E-P fork trucks conserves valuable space. The Elwell-Parkers have also proved valuable in many specialized plant applications as illustrated.

Whatever you produce, you can "ease the squeeze" for more production with an Elwell-Parker truck transportation system.

THE ELWELL-PARKER ELECTRIC COMPANY
4004 St. Clair Avenue, Cleveland 3, Ohio

GET THE FACTS ON 150 ELPAR MODELS
Write for the informative ELPAR Condensed Catalog.

ELPAR
INDUSTRIAL TRUCKS

When inquiring check FP 3225 opposite last page

FORK LIFT TRUCKS AND TRACTORS SINCE 1919
Manufactured Only By Towmotor Corporation • The Pioneer Maker Of Fork Lift Trucks

TOWMOTOR...

THE EFFICIENCY KING

OF LP-GAS

INDUSTRIAL TRUCKS

Smooth Performance

Long Engine Life

No Objectionable Fumes

Low Fuel Cost

Long Oil Life

Less Maintenance

Towmotor LP-Gas Trucks offer a new high in performance and efficiency. Users save on fuel, oil and maintenance, because LP-Gas costs less, doesn't dilute crankcase oil and leaves no carbon or gum deposits.

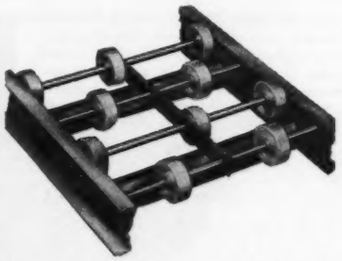
For the highest efficiency in fork lift operation see your nearby Towmotor Representative . . . you'll find a complete line of constant power fork lift trucks for every requirement. Consult your Telephone Directory or write TOWMOTOR CORPORATION, Div. 4408, 1226 E. 152nd St., Cleveland 10, Ohio.

TOWMOTOR
THE ONE-MAN-GANG

When inquiring check FP 3226 opposite last page

Less weight, longer life when conveyor wheels are nylon plastic

Nylon plastic wheels, running on nylon bearings, mounted on an aluminum frame provide conveyors that are 20% lighter than all-aluminum units of equal load capacity. Nylon construction contributes resistance to weather and temperatures from 150 to −10°F. Bearing lubrication is unnecessary —in fact, harmful here.



Wheels of nylon plastic resist acids, salt water

Conveyor units with nylon plastic wheels are made in 12, 15½, 18½, and 24½" widths; 5 and 10' straight sections; 38¼, 16½, 91½" (outside radius) curves.

(Nylo-Wheel conveyor is a development of Metzgar Conveyor Co., Dept. FP, 461 Douglas Ave., Grand Rapids 4, Mich. . . . or for more information check FP 3227 on handy form opposite last page.)

Install steel shelving without bolts, tools

Boltless steel shelving that can be erected without tools is described in a 4-page illustrated folder. Use of three types of simple clips in marking all installations is explained as well as assembly methods that prevent vibration and sagging underloads.

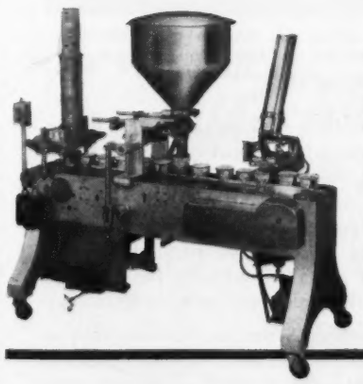
Bulletin No. 701 on "Klip-Bilt" shelving is issued by Frick-Gallagher Mfg. Co., Dept. FP, Wellston, Ohio. When inquiring specify FP 3228 on handy form opposite last pg.)

How to Mechanize Packaging of Prepared Foods

for: Lower Costs
Cleaner Packages
Greater Accuracy

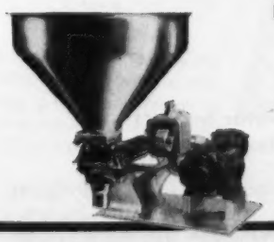
Chili • Potato Salad • Pie Fillings • Whipped Butter • Cottage Cheese • Liquid Caramel • Process Cheese • Gelatin Salads • Cole Slaw . . . *or what is your product?*

YOU CAN package nearly any semi-solid, semi-liquid or viscous food product up to 10 times faster with Triangle machines than by hand methods. Packages are clean. Weights are accurate (no check-weighing necessary). Filling is from the bottom up to eliminate air pockets. No fuss . . . no muss . . . less labor . . . and far lower costs!



FULL AUTOMATIC MODEL DS-1

Automatically dispenses, accurately fills and tightly caps paper, plastic or glass containers at speeds up to 35 per minute with one operator. Twin-line model available for 70 per minute production.



LOW COST TABLE MODEL

This machine accurately fills up to 19 packages per minute with one operator. An all steel work table and hand-operated disc lid capper are optional.

Find out if this is the answer to your packaging problem. Write today for complete details.

TRIANGLE PACKAGE MACHINERY CO.

6638 W. Diversey Avenue
Chicago 35, Illinois

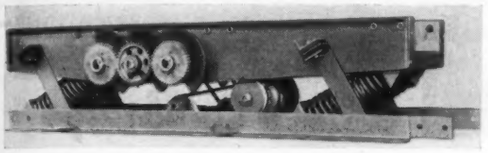
When inquiring check FP 3229 opposite last page

Oscillating action of conveyor created by simple mechanism

Only three moving parts needed to assure smooth, uniform flow without spillage

Uses: For smooth, uniform conveying of bulk materials of wide range of consistencies.

Features: Drive is designed to avoid difficulties encountered when overloads jam up machinery and cause breakdowns. Three eccentric weights on drive assembly are held on individual shafts. Shafts are geared together and driven by countershaft belted to motor. Assembly fits in a section of the conveyor 5′ long.



Vibrating trough is driven by rotating eccentric weights imparting uniform flow

Description: Oscillating motion is set up by centrifugal forces initiated by the weights. They alternately impart forward and backward thrusts to the trough.

Trough rests on rocker arms and coiled springs all supported on base frame. Drive, standard trough, and end section make up the conveyor. Standard drive section is 5′ long; trough section is 10′ long. End section is made to individual needs. Single drive units convey materials distances of up to 200′. Troughs are available in materials suitable for handling foods and in widths from 8 to 24″. Open, weatherproof, or dust-tight construction may be specified.

(Oscilveyors are built by Gifford-Wood Co., Dept. FP, Hudson, N. Y. . . . or for more information check FP 3230 on handy form opposite last page.)

Manual centralized system applies grease at 2500 psi

A manually operated centralized system applies lubricant under pressure of 2500 lb to individual bearings. Lubricant is forced through a single line circuit of injectors, or adjustable hydraulic force-feed measuring valves.

Indicator device shows when cycle has been completed. Release of handle automatically vents and recharges system. Reservoir (15-lb) may be repacked by hand or through button head filler fitting.

(Centro-Luber is made by Lincoln Engineering Co., Dept. FP, 5703-26 Natural Bridge Ave., St. Louis 20, Mo. . . . or for more information check FP 3230A on handy form opposite last page.)

PROVIDES SPEED AND AUTOMATIC QUALITY CONTROL

...for the MURRAY COMPANY (Division of H. A. Johnson Co.)

PROBLEM:

High labor charges and uncertain accuracies in loading sugar to syrup kettles presented a challenge to the cost- and quality-conscious management of the H. A. Johnson Co.

SOLUTION:

A suitable conveyor system feeding a Richardson Automatic Scale provided high volume, controlled accurate flow of sugar to the cookers. Another alert management had reduced their labor charge to practically nil and incorporated machine-made, repetitive accuracy into their process.

Rising labor costs *can* be offset while still maintaining both quality and quantity production. Proof of this is the Richardson installation pictured, recently completed for the Murray Company, Division of the H. A. Johnson Co., Boston, Mass. Adopting the recommendations of a Richardson field engineer, this well known manufacturer of soda fountain syrups and toppings has actually increased output at reduced unit cost. At the same time product quality is now rigidly controlled, *automatically*.

Materials handling by weight has been a Richardson specialty for more than fifty years. And every year has seen more practical applications throughout the processing industries of this wide range of experience.

At no obligation to you, a Richardson engineer will gladly call, survey your present methods, and show you the Richardson way to lower costs through efficient materials handling by weight.

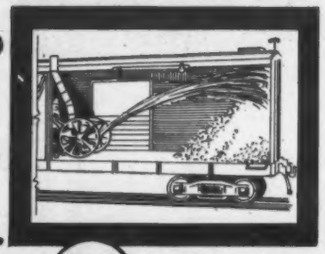
Richardson

MATERIALS HANDLING BY WEIGHT SINCE 1902

Richardson Scale Co., Clifton, New Jersey. Automatic Weigher Systems of All Types: Automatic Bulk Weighing Hopper Scales, Including Conveyor-Feed Types • Continuous Feeder-Weighers • Automatic Bagging Scales • Bag Sewing Conveyors Packers • Multi-Material Proportioning • Process Control Panels. *Branch offices in:* Atlanta • Boston • Buffalo • Chicago • Detroit Houston • Minneapolis • New York • Omaha • Philadelphia Pittsburgh • San Francisco • Wichita • Montreal • Toronto.

When inquiring check FP 3231 opposite last page

LOAD AND TRIM BOX CARS *FASTER, CHEAPER..*



with S-A BOX CAR LOADERS

S-A Loaders and Pilers will SAVE YOU MONEY with every car you load. One man, working part-time can load and trim up to 150 tons per hour of granular material up to 2" lump size.

PRICED AS LOW AS $762.00 F.O.B. AURORA

IN STOCK... FOR IMMEDIATE DELIVERY

WRITE TODAY FOR COMPLETE INFORMATION

STANDARD PRODUCTS DIVISION
STEPHENS-ADAMSON MFG. CO.
17 Ridgeway Ave. Aurora, Illinois

When inquiring check FP 3232 opposite last page

ANY LENGTH YOU WANT TO SUIT YOUR REQUIREMENT

The "HAMMOND" *Screw-Veyor*

... DOES AWAY WITH Old Fashioned "U" Shaped Boxes

•

STREAMLINED TUBULAR CONSTRUCTION

•

ALWAYS IN POSITIVE ALIGNMENT

•

NO DISTORTION

•

DUST-TIGHT MOISTURE-PROOF

•

INSURES SAFETY AND ELIMINATES FIRE HAZARD

•

... The most outstanding improvement in conveyors in a decade. Each screw length is suspended in patented bearings, removing all structural load from the casing. Runs as smooth as a machine... Rigid—Flexible—Accessible. WRITE FOR FORM M-600-2.

Write for Form M-600-2

This discharge end assembly combined with any number of intermediate assemblies and a feed end assembly forms a complete conveyor system to suit any condition.

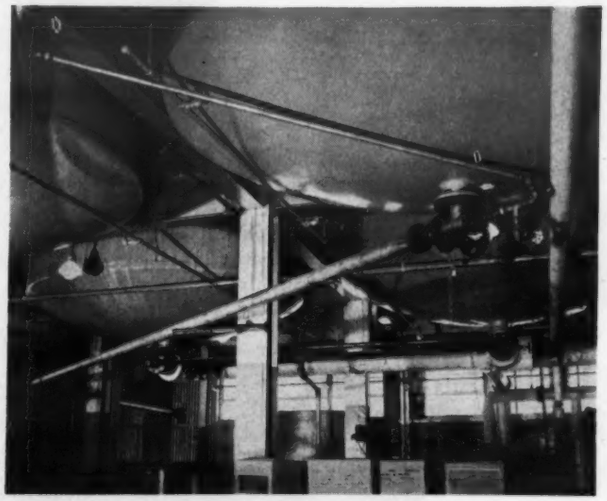
Screw Conveyor Corporation

701 HOFFMAN STREET • HAMMOND, INDIANA
WINONA, MISSISSIPPI SANTA CLARA, CALIFORNIA

TRADE MARK REG. U.S. PAT. OFFICE

When inquiring check FP 3233 opposite last page

materials handling



Large ID stainless tubing provides maximum flow in carrying liquid sugar from overhead tanks to loading area outside plant

lower initial cost, increased service life for

liquid sugar line

Refiner replaces old system with stainless tubing that has larger ID but same OD as schedule 40. Installs easily —costs less—resists corrosion

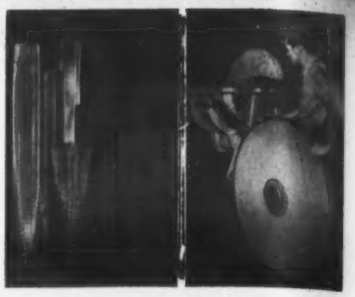
Lower piping costs, increased flow capacity, plus greater service life are among important advantages in many applications where schedule 5 stainless tubing has replaced heavier pipe — in most instances the familiar schedule 40.

Imperial Sugar Co., Sugar Land, Texas experienced just such savings as well as improved performance and better sanitation when it replaced an old system of copper and red brass pipe.

As the manufacture of liquid sugar and the necessary cleaning precautions subject the refinery's transfer lines to temperatures of 168 to 200°F, corrosive attack is inevitable. Also, a large part of the pipe system is exposed to corrosive action of the outdoor atmosphere. With sections made of red brass, abrasion difficulties were encountered. Also, materials used in the old system on one occasion cracked when frost occured. Since lightwall tubing system has been installed at Imperial, corrosion and weather difficulties have been eliminated.

Imperial's system, where the lightweight tubing is used, handles liquid sugar as it comes from dilution tanks, transferring it to a heat exchanger. Entering the exchanger at approximately 190°F, sugar leaves at about 90°F. From there liquid sugar moves to loading area outside plant for loading into tank trucks.

Tubing's lighter weight simplifies installation. Weight of 100′ of schedule 40 ss pipe is 167.9 lb compared to 86.8 lb for the



NO MATTER HOW YOU BUY

INDUSTRIAL WIRE CLOTH

—IN BULK from stock or SPECIAL FABRICATIONS—

You can rely on

Cambridge

COMPLETE LINE—Cambridge stocks include a wide variety of specifications from the finest to the coarsest mesh in any metal or alloy.

QUALITY—Accurate mesh count and uniform mesh size are assured by individual loom operation and careful inspection just before shipment.

PROMPT SERVICE—You get immediate delivery on the most frequently used types of cloth. If your needs are not in stock, we'll schedule our looms to get your material to you without delay.

CAMBRIDGE ENGINEERS, both in the home office and in the field, are fully qualified to help you select the cloth to meet your needs, whether you order in bulk or special fabrications. In fabricating parts of any type . . . filter leaves, strainers, sizing screens . . . we'll work from your prints or draw up prints for your OK.

LET US QUOTE *on your next order for wire cloth. Call your Cambridge Field Engineer—he's listed under "Wire Cloth" in your classified telephone book.*

OR, WRITE DIRECT for FREE 80-page CATALOG and stock list giving full range of wire cloth available. Describes fabrication facilities and gives useful metallurgical data.

The Cambridge Wire Cloth Co.
Dept. H • Cambridge 8, Md.

WIRE CLOTH | METAL CONVEYOR BELTS | SPECIAL METAL FABRICATIONS

OFFICES IN PRINCIPAL INDUSTRIAL CITIES

When inquiring check FP 3234 opposite last page

Easy assembly is advantage in extending line of tubing to loading dock for transfer into waiting trucks

same length of schedule 5. In other words, the same amount of pipe is provided but with half the weight and at half the cost. In spite of this light weight, schedule 5 affords adequate factor for safety for a majority of process uses. Lines are formed by means of welded fittings, Van Stone unions, and connectors in which the pipe end is rolled-in like tubing in a sheet tube.

Schedule 5 (16 gage) stainless steel tubing is used at Imperial in 2, 3, and 4" ips sizes with wall thickness of .065"; .083" respectively.

Savings amount to as much as 50% on pipe costs (schedule 5 vs 40); 10% on valves and fittings. Simplicity of assembly reduces labor cost.

(Schedule 5 tubing is available from Carpenter Steel Tubing, Alloy Tube Div., Dept. FP, 110 Springfield Rd., Union, N. J. . . . or for more information check FP 3235 on handy form opposite last page.)

How four food plants cut costs with new conveyor units

Four different applications of either, or both, gravity wheel and belt conveyors are described in a series of case history reports. Specifically, these concern a flour mill, cheese processing plant, produce shipper, and a sugar refinery. Each report gives facts and figures on how proper use of equipment has speeded up operations and reduced costs. Type of operation is described and all equipment listed. Action photos show how installations function.

Field Reports series #433 is issued by The Rapids-Standard Co., Dept. FP, 342 Rapistan Bldg., Grand Rapids 2, Mich. When inquiring specify FP 3236 on handy form opposite last page.

for • better service
• fewer losses
• easier handling

IT'S THE *NEW* ALUMINUM

TOTE BOX

by WEAR•EVER

At Lohrey Packing Company in Cincinnati, Wear-Ever's Tote Box rates high for service. Its portability and light weight make it the perfect transport container.

Dimensions:
13½" x 32" (Inside Top)
11" x 29½" (Inside Bottom)

It's Sanitary!

Drawn completely seamless from heavy gauge wrought sheet, aluminum alloy, full 12" deep. Rounded corners. No cracks, seams, crevices.

It's Labor Saving!

Light in weight, easy to handle, because it's *aluminum* alloy.

It Cuts Costs!

Made from extra tough, heavy-gauge wrought aluminum alloy sheet for years of trouble-free service and satisfaction.

It's New!

EXCLUSIVE FEATURES

1. Top edge fits hand for comfortable handling.
2. Extra strong: double embossed side panels, triple embossed bottom panels.
3. Completely seamless—easy to clean.

Stack when filled

Nest when empty

WEAR•EVER

Aluminum UTENSILS

THE ALUMINUM COOKING UTENSIL CO., INC.,
WEAR-EVER BLDG., NEW KENSINGTON, PA.

The Aluminum Cooking Utensil Company, Inc.
6708 Wear-Ever Bldg., New Kensington, Pa.

GENTLEMEN: *I'd like to know more about your new tote boxes.*
☐ Send me your catalog. ☐ Have your representative see me.

NAME.....

TITLE.....

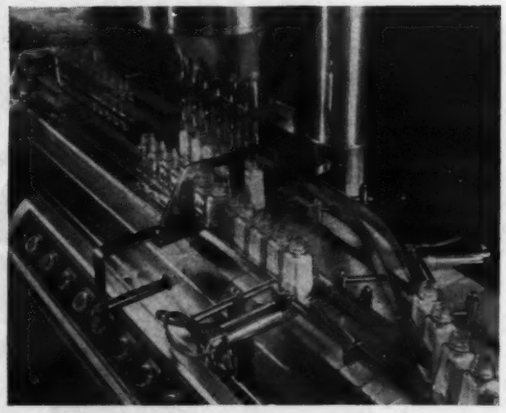
Fill in, clip to your letterhead and mail today.

NEW ITEM! *Wear-Ever's new Nickel Scouring Cloth. Won't scratch, won't mar, far outlasts ordinary scouring cloths. At your dealer's.*

When inquiring check FP 3237 opposite last page

INCREASE PRODUCTION WITH THE FILLER THAT HAS MORE OF EVERY-THING YOU NEED...

INCLUDING SPEED!



Speed, accuracy, versatility, ease of maintenance... *no filler on the market today has as much of these qualities in combination as Mateer.* For instance—

SPEED

Mateer Electric Fillers handle up to 240 fills per minute... and where powders are concerned are *twice as fast as any other auger filler!*

ACCURACY

Mateer precision engineering results in an accuracy rating of 99.7%. *That kind of efficiency saves money!*

VERSATILITY

Mateer Fillers handle all kinds of material ... you can change from one to another in minutes. No similar filler is as versatile.

CLEANLINESS

Mateer Fillers handle sterile materials, and under the most rigid specifications. All standard parts are approved for aseptic filling.

MATEER MODELS INCLUDING MANUAL, SEMI-AUTOMATIC AND FULLY AUTOMATIC ARE CUSTOM ENGINEERED TO YOUR SPECIFIC NEED

Send for our latest brochure—How Modern is Your Filling Equipment? Write Dept. F.

G. DIEHL MATEER CO.
Lincoln Highway, Strafford, Wayne, Pa.

When inquiring check FP 3238 opposite last page

Two-ton capacity box folds into unit 16" high

Permits tiering when loaded, nesting when empty

Uses: For in-plant handling, including movement of products from process to process, or into and out of storage. Containers can also be used for rail-road or truck shipments.

Features: Units can be tiered when open or knocked down. In

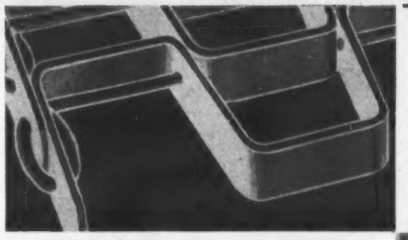
either case, clearance of two inches between containers permits them to be handled by fork truck.

Description: Container comes in two sizes — 40 x 48 x 24" and 32 x 40 x 24". Both knock down to 15-¾", and have capacity of 4000 lb. Square legs on unit provide solid support when tiering.

(Pyramid Box is a product of Paltier Corp., Dept. FP, 1701 Kentucky St., Michigan City, Ind. ... or for more information check FP 3239 on handy form opposite last page.)

NEXT MONTH

Overhead cold room conveyor saves space. Eliminates time and labor expended in loading and wheelracks



Completely **FLEXIBLE...**
no creep
no weave
no jump

LA PORTE
FLEXIBLE STEEL CONVEYOR BELTING

La Porte's flexibility will brighten your profit picture—both in application and in performance. Adaptable to every type of food handling operation from loading hopper to shipping. Flexible *open mesh* feature provides tighter grip on the friction drum, prevents slippage, jerking ... provides perfectly flat, smoother-moving surface for containers. Easier to clean, maintain. Steel construction stands up under heaviest abuse, lasts years longer.

La Porte's initial cost is lower than comparable types, too! Available in any length, practically any width. So, whatever your process, find out the many ways you'll profit by installing versatile, long-lasting La Porte Conveyor Belting.

LA PORTE

Write TODAY for illustrated literature, prices.

MAT AND MFG. CO.
BOX 124 Dept. A *La Porte, Indiana*

When inquiring check FP 3240 opposite last page

alphabetical index on page 93

... for alphabetical index of all processes, materials, services, and equipment discussed in this issue's editorial columns and advertisements, turn to page 93. "Quick-locator" starting on that page was a feature in FOOD PROCESSING years ago. It means extra work for the Editors, but it helps you, the reader, in finding what you want ... in a hurry!

Pneumatic waste disposal avoids costly shutdowns, ups skinning production 16%

Centralized system eliminates collector drums at sausage skinning machines.

Problem: In production of 3600 lb of skinless sausages, franks, and similar prepared meats at R. R. Pressel Sausage Co., Detroit, Mich., 12 bu of discarded casings must be disposed of every hour. Originally, each skinning machine was equipped with a small vacuum unit which sucked up skins and strings, which dropped in drum.

Disadvantage of this method was that each machine had to be shut down for five minutes at half hour intervals to empty drums. This manual job required full time of one worker. Time lost was 1 1/3 hr for each machine per 8 hr shift.

Solution: Centralized pneumatic system was installed. It consists of a centrifugal exhauster which creates the vacuum, a primary and a secondary separator, plus 2¼" pipelines connected to the peeling machines. System is held continuously to a constant vacuum which draws casings and strings from the peeling machines through the pipelines into a common manifold that feeds the primary separator. Bulk of the casings are collected in the primary separator, the rest in the secondary separator. Air is filtered through the secondary separator, returned to production area.

Casings stripped from sausages are moved by pneumatic line to disposal units

Casings are discharged through a rotary discharger at the bottom of the primary separator.

Results: Skinning machines now operate without any interruption for waste disposal. Increased capacity is equivalent of one machine. All manual handling has been eliminated and full time of one worker saved for more productive jobs.

(Pneumatic conveying system engineered and installed by Lamson Corp., Dept. FP, 303 Lamson St., Syracuse 1, N. Y. . . . or for more information check FP 3241 on handy form opposite last page.)

Less Idle Time WITH MOTO-TRUC*

* To make an investment in a lift truck is one thing . . . to make it *pay* is another. The amount of idle time logged against a truck is a major factor in whether a truck is "paying its way."

MOTO-TRUCS offer *LESS* idle time because of simplified operator controls. Their patented *Roller Grip Controls* make it easy for practically anyone in your plant to operate the truck . . . and remember . . . There's a MOTO-TRUC for every purpose.

Simplified Roller Grip Controls

Send for Bulletin No. 54

MOTO-TRUC Designers FOR THE INDUSTRY PATENTED

The MOTO-TRUC Co.

Representatives in Principal Cities

1988 E. 59th St. • Cleveland 3, Ohio

Pallet . . . Platform . . . Hi-Lift Trucks

LARGEST EXCLUSIVE MANUFACTURER OF "WALKIES"

When inquiring check FP 3242 opposite last page

VISKON®
FILTER FABRIC
Produces CLEARER Edible Oil . . .

"Extreme clarity in edible oils is essential in meeting competition and in creating consumer demand. VISKON filter fabric gave us superior clarity. In addition, we were delighted to discover that it took but a matter of seconds to clean off the filter cake. We cut our downtime by more than 40% . . . You can see by this statement why we are strong boosters of VISKON filter fabric."

—Mr. Napoleon Abraham
Ray Vegetable Oil Co.
Moultrie, Georgia

IF YOU HAVE PLATE and FRAME FILTERS, CHECK VISKON for LOWER COSTS, GREATER EFFICIENCY

Here's Why

If you are filtering with plate and frames in the *food processing field,* VISKON filter fabric has many special advantages. For instance, why pay to launder filter cloths? It's cheaper to use VISKON through several filter cycles and throw it away! . . . Remember, you get not only clearer filtrate with a faster flow rate at lower pressure, but also you find the filter cake actually falling off when plates are released to be cleaned . . . There are 400 basic weights and finishes in cotton and synthetic fibers to meet your specific need . . . Why not let our filter media consultant give you the complete story — without obligation? Then judge for yourself.

Use This Handy Coupon, or
Dictate Your Inquiry Letter To:
Mr. A. I. Pierce, Filter Media Engineer
THE VISKING CORPORATION
P. O. Box 72 * North Little Rock, Arkansas

NAME_____
ADDRESS_____
CITY_____ ZONE____ STATE_____
Type of Filter Press:_____

VISKON®
nonwoven fabrics

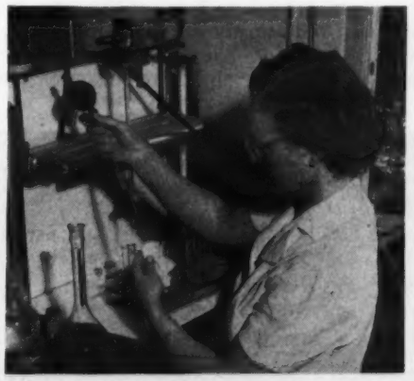
When inquiring check FP 3243 opposite last page

Quality Control
and the laboratory

General Mills lab personnel find many uses for disposable wipers

Photo depicts one of the many uses which General Mills, Minneapolis, Minn., laboratory personnel have found for disposable paper wipers. In the lab these wipes are used for wiping of pipettes, burettes, and test tubes. They are also employed as cushions in beakers where test tubes are placed upside down for drying and draining. Removing foam from titration liquid is still another application in which the wipes have been found successful.

Disposable paper wipes are soft, strong, and absorbent, holding up to 8 times their own weight in liquids. Wipers of the type used here are available in 5″ x 9″ and 15″ x 18″ size. They are dispensed from a cardboard carton. Non-abrasive feature makes them particularly adaptable for wiping delicate instruments. Wipes are discarded after use, keeping the laboratory neat and clean.



Frances Moyer, chemist in General Mills lab, wipes a pipette with disposable paper wipers

(Disposable paper wipers, Kimwipes, are a product of Kimberly-Clark Corporation, Dept. FP, Neenah, Wis. . . . or for more information check FP 3244 on handy form opposite last page.)

Read how Quaker Oats uses x-ray equipment for many quality control operations, in addition to inspection of grain. Story on pg 16

Instrument, which is combination of scrubbing tower and analyzer, provides

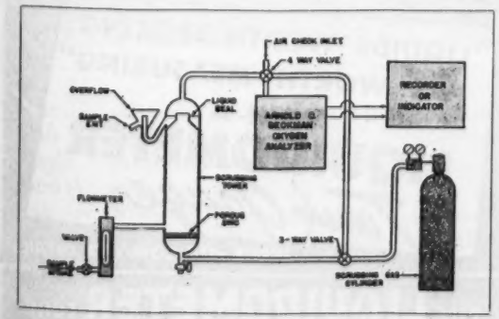
continuous dissolved oxygen measure

Selective stripping of oxygen from sample is key to operation of instrument which continuously measures concentration of dissolved oxygen. Instrument has possible application wherever control of dissolved oxygen is desirable—such as making beer and wine, yeast products, vitamins, and in treatment of waste waters.

Continuously flowing sample enters a scrubbing tower (see diagram), through which is bubbled a stripping gas (usually hydrogen or nitrogen) at a constant rate of about 15 cc/min. This gas collects an amount of dissolved oxygen proportional to the degree of oxygen saturation of the solution. Stripped liquid overflows weir at top of tower and passes out through overflow drain.

Gas portion enters analyzer, which measures magnetic susceptibility of the oxygen—this gas is unique in that it is strongly paramagnetic, whereas all other gases (with rare exception) are diamagnetic. (Diamagnetic substances are repelled by a magnetic field, paramagnetic substances are attracted to one.) Thus, a measure of this property is a measure of the oxygen present. Readings can be in percent or parts per million dissolved

(*Continued on next page*)



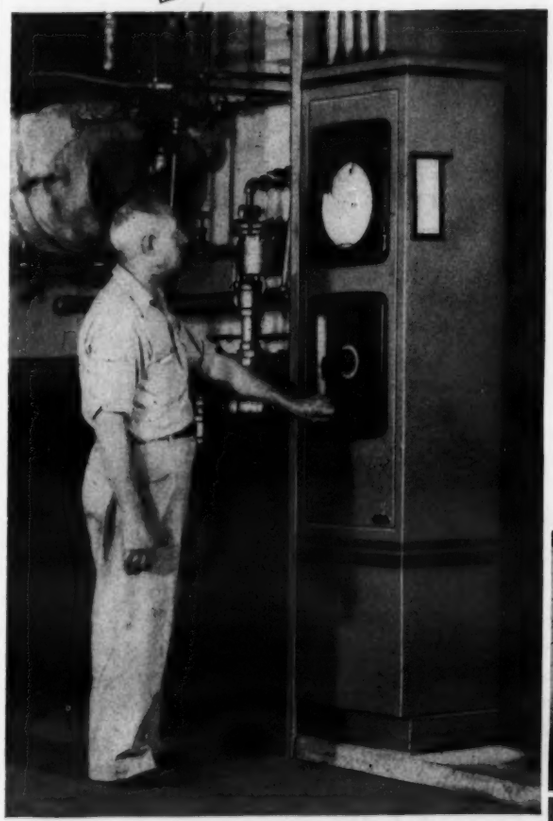
Schematic diagram of instrument shows how scrubbing tower is combined with analyzer to provide continuous oxygen measurement

Maker* of

Page & Shaw simplifies checking of

24 critical plant temperatures

. . . with compact, centralized Foxboro system



Keeping a close watch on temperatures of 24 widespread storage and production rooms doesn't require any "legwork" at Daggett Chocolate Co. A Foxboro Segmental Chart Recorder "makes the rounds" automatically . . . logs each temperature every half hour.

The Recorder, installed in the compressor room, gives the refrigeration engineer a complete 24 hr. temperature "picture" on a single, circular chart. In addition, a selector switch unit permits him to spot check any room manually in seconds. Besides saving countless hours of inspection tours, the centralized system *continuously* insures protection of candy freshness and finish from bloom or sweating.

Foxboro Centralized Recording Systems are simplifying temperature and humidity measurements throughout the food industry . . . providing more compact, highly legible records for quality control. Write for complete information on this modern method.

**Daggett Chocolate Co.; also maker of Lowney's, Apollo, Gobelin, and other famous-name chocolates.*

Compact, cabinet-mounted Foxboro Segmental Chart Recorder and Selector Switch Unit centralize room temperature measurements in compressor room at Daggett Chocolate Co., Cambridge, Mass. Typical of critical areas measured are packing room (top right) and storage room (lower right). Sensitive, wall-mounted Dynatherm bulbs detect room temperatures.

THE FOXBORO COMPANY, 928 NEPONSET AVENUE, FOXBORO, MASS., U. S. A.

FOXBORO
REG U S PAT OFF
Centralized Recording and Control Systems

FACTORIES IN THE UNITED STATES, CANADA, AND ENGLAND

When inquiring check FP 3245 opposite last page

MOISTURE CONTENT

without involved computations!

Quickly and accurately determine the moisture content in any material—whether fibrous, granular, liquid or semi-liquid—with the DIETERT MOISTURE TELLER. No involved computations. No skilled help required!

The No. 276 Moisture Teller is a sturdy, versatile unit, equipped with a thermostat having a range of 150 to 300°F. Ideal for drying an exceedingly wide range of samples. Drying temperature is controlled within 7 degrees of the selected temperature. The Moisture Teller may also be used as a drying oven.

A complete line of Dietert Moisture Tellers is available for testing all types of materials, including large bulky samples of wool, fibres, paper and textile products. Model 276 above and Model 278A-12 at right.

HARRY W. DIETERT CO. Control EQUIPMENT

HARRY W. DIETERT CO.
9330 Roselawn Detroit 4, Michigan
Send me data on your Moisture Tellers. I want to test the following material_____
NAME_____
COMPANY_____
ADDRESS_____
CITY_____ STATE_____
F.P

When inquiring check FP 3246 opposite last page

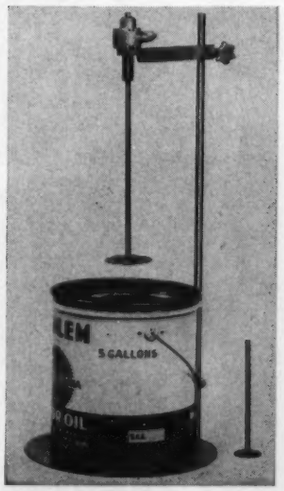
(*Continued from preceding page*)

oxygen. Readings are recorded on any potentiometer type recorder, mounted with instrument or remote.

Instrument is adaptable for sludges and other high solid fluids. Special pump provides continuous sample flow, and weir is designed to avoid collecting solids. Tower is periodically freed of solids by a vibrator and subsequent flushing.

(Model 1A3B Dissolved Oxygen Analyzer is development of Arnold O. Beckman, Inc., Dept. FP, 1020 Mission St., South Pasadena, Calif. . . . or for more information check FP 3247 on handy form opposite last page.)

Portable mixer suited for small jobs



Portable mixer has adjustable-speed air motor, comes with two stirrers

Uses: For laboratory and small mixing jobs. Handles liquids, dispersions, and slurries.

Features: Portable mixer has stirrer constructed of stainless steel. Air motor provides variable speeds for mixing.

Description: Mixer consists of self-supporting base, stand, motor, and stirrer. Unit weighs 20 lb and measures 15 x 15 x 34" high. Stirrer attaches to motor by sleeve coupling. Height is adjustable. Air motor (1/3 hp at 6000 rpm and 80-psi air pressure) will idle at 100 rpm. Patented stirrer design provides either mixing or homogenizing action, depending upon speed.

(Type-L Mixer is product of Conn and Company, Dept. FP, 11 South Marion Street, Warren, Pa. . . . or for more information check FP 3248 on handy form opposite last page.)

'What's New in the Laboratory' booklet includes prices for lab ware

Twenty-third edition of booklet describes and illustrates variety of laboratory equipment, complete with prices. Included are constant temperature circulator, automatic filler, shaking incubator,

IN YOUR RECIPROCATING PUMPS

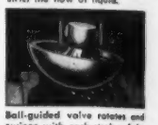
HOW OFTEN DO YOU REPLACE PUMP VALVES?

Royal Crown PUMP VALVES

MADSEN Equipment that Serves

Here's a revolutionary ball-guided spherical valve that substantially outlasts conventional-type valves under any pumping conditions. ROYAL CROWN PUMP VALVES are guided by a frictionless ball stem (not a rigid guide) which allows them to oscillate and turn with the fluid stream. There is a minimum of resistance to the fluid as they swing freely with each stroke of the pump . . . seating perfectly, each time in a new position. This simple operation means long, trouble-free life. ROYAL CROWN VALVES provide greater pumping capacity too, at less pumping speed. Made in all sizes and in all suitable metals. WRITE FOR LITERATURE.

Round valve surface is streamlined . . . no obstructions to restrict the flow of liquid.



Ball-guided valve rotates and swings with each stroke of the pump. Each turn, each swing—a perfect seat.

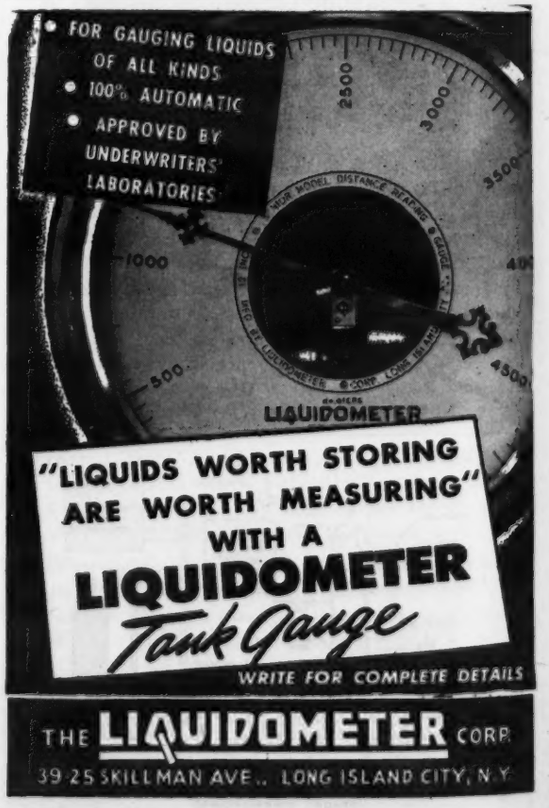
Cup-like top of valve helps it close instantly. The ball stem is a frictionless guide.

SIMPLE CONSTRUCTION
No springs or complicated parts to get out of order . . . means long, trouble-free service.

CAGE SEAT VALVE

MADSEN WORKS
Division of Baldwin-Lima-Hamilton Corporation
14129 E. ROSECRANS AVE., P. O. BOX 38 • LA MIRADA, CALIFORNIA, U.S.A.

When inquiring check FP 3249 opposite last page



"LIQUIDS WORTH STORING ARE WORTH MEASURING" WITH A LIQUIDOMETER Tank Gauge

WRITE FOR COMPLETE DETAILS

THE LIQUIDOMETER CORP.
39-25 SKILLMAN AVE., LONG ISLAND CITY, N.Y.

When inquiring check FP 3250 opposite last page

flame photometer, polyethylene items, pre-packaged Kjeldahl reagents, Zimmerli gage, and many others.

"What's New in the Laboratory" can be obtained from Scientific Glass Apparatus Co., Inc., Dept. FP, 100 Lakewood Terrace, Bloomfield, N.J. When inquiring specify FP 3251 opposite last pg.

Automatically performs titrations faster, more accurately than hand method

Uses: Permits one operator to handle large numbers of titrations simultaneously, with smaller average time per titration and improvement in overall accuracy.

Features: Automatic titrimeter measures out required amount of titrant solutions and stops flow at exact endpoints. Instrument changes over easily for micro and Karl Fischer moisture determinations.

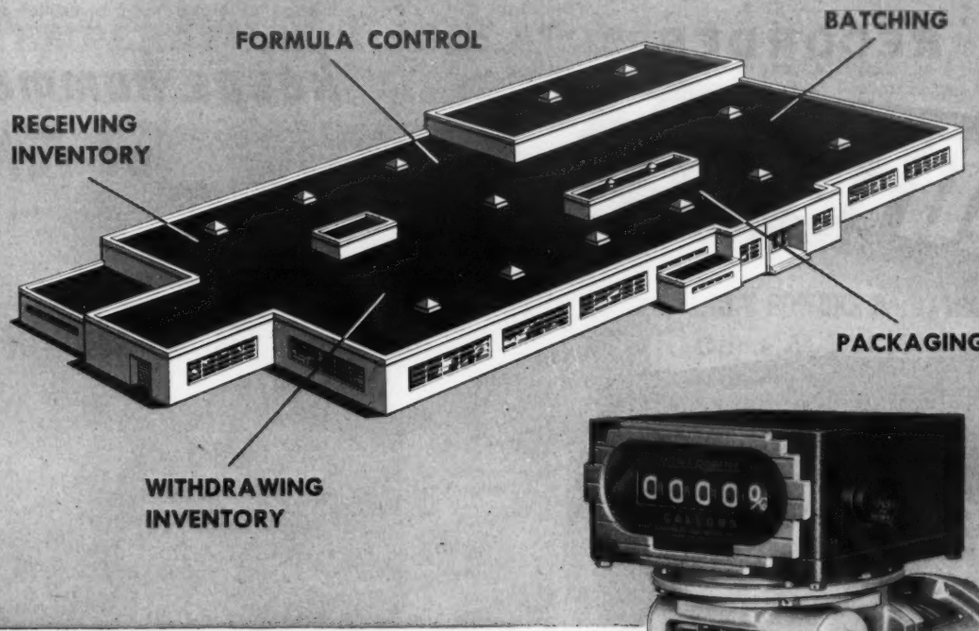
Description: Entire automatic section of instrument (one-tube amplifier, power supply, special burette, and polyethylene tubing) is offered separately and may be attached to manufacturer's manual titrimeter.

Chemist using three automatic titrimeters

Unit uses two sensitive electrodes which continuously transmit potential as titrant is added to sample. Control unit which received signal compares this value with pre-set one for reaction's true endpoint. When two values coincide, signal actuates solenoid and clamp closes on small-bore polyethylene tubing feeding titrant.

(Automatic Titrimeter and automatic attachment for manual Titrimeters are products of Fisher Scientific Co., Dept. FP, 717 Forbes St., Pittsburgh 19, Pa. Check FP 3252 opposite last page.)

Accounting at Every Liquid Handling Point



ROCKWELL ROTOCYCLE METER
Cutaway to show the all-revolving rotor construction

Rockwell Industrial Meters

Guard Your Liquids as You Guard Your Cash

Put Rockwell Industrial Meters to work. Then you'll control your costs . . . control your processes . . . control your end product quality. Rockwell meters are basic accounting tools for verifying purchases, for stopping losses, for inventory and departmental control and for tax analysis purposes. They will accurately measure most any liquid that can be piped. Available in all sizes and several types for every requirement. For full details use coupon or write.

"316" Stainless Steel Meter

FOR CORROSIVE LIQUIDS

This meter, made entirely of type 316 stainless steel is the answer to many a measurement problem in the Food, Chemical, Drug and Industrial Processing fields. It resists corrosion. Made in two sizes rated at 100 and 200 gpm. Quantity control valves, strainers and a variety of registers available. Described in bulletin OG-406.

YOU CAN RELY ON ROCKWELL

CLIP COUPON—MAIL TODAY

ROCKWELL MANUFACTURING COMPANY Dept. 108-H
Pittsburgh 8, Pennsylvania

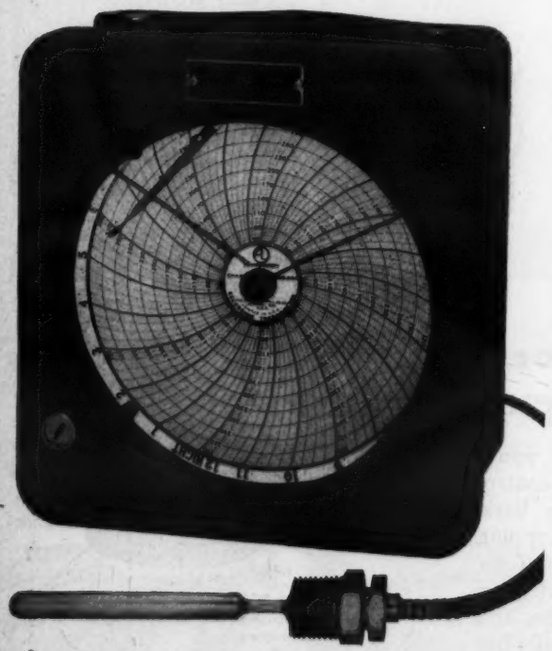
Gentlemen:
I am interested in measuring _____ (Name of Liquid)
Pipe Size _____"
Working Pressure _____ psi Temperature _____ °F max.
Max. Flow Rate _____ gpm Min. Flow Rate _____ gpm

YOUR NAME _____
COMPANY _____
STREET _____
CITY _____ ZONE _____ STATE _____

When inquiring check FP 3253 opposite last page

New TEMPERATURE RECORDER...

AUTO-LITE



Available with 24-hour or 7-day electric or mechanical chart drive.

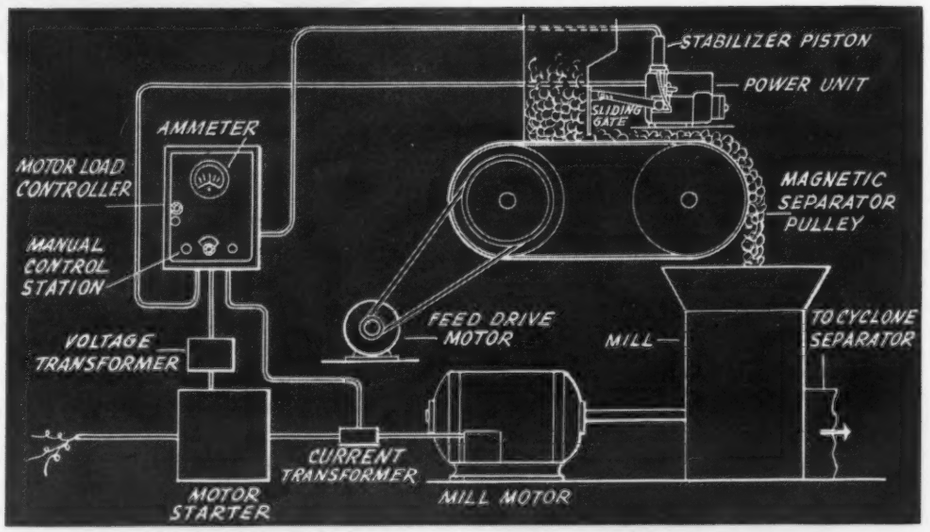
Model 1000 is the latest addition to the Auto-Lite line of temperature recorders and indicators. It has evenly calibrated, 6-inch chart . . . attractive die-cast case. Various standard chart ranges from minus 40°F. to plus 550°F. The style illustrated is portable type, with capillary tubing. Also available for mounting on panel boards or walls. Obtainable with a cycle indicator for refrigeration. Priced from $49.50. Write for further information.

THE ELECTRIC AUTO-LITE COMPANY
INSTRUMENT AND GAUGE DIVISION
TOLEDO 1, OHIO
NEW YORK · CHICAGO · SARNIA, ONTARIO

When inquiring check FP 3254 opposite last page

Greater operating efficiency—at less cost—with adoption of motor load controller that

keeps hammermills operating at full capacity



Motor load controller regulates hammermill load at Ralston Purina by positioning a gate

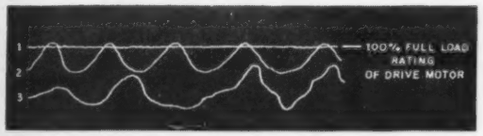
C. C. WARD, General Superintendent
R. D. GRAY, Plant Engineer
Ralston Purina Co.
as reported by **FP Staff**

Problem: Regulating the rate of feed input to hammermills, attrition mills, and pulverizers to prevent plugging has long plagued feed manufacturers and other processors engaged in size reduction processes. At Ralston Purina plant in Kansas City an operator was on duty at all times to manually set a gate which controlled the depth of feed material flowing onto hammermill feed belt. If ammeter, connected to the 70 hp drive motors, fluctuated from normal, operator would raise or lower gate accordingly. As shown in curve on next page, manually controlled mills operate far below the efficiencies for which they were designed, and result in high grinding or pulverizing costs.

Solution: With the installation of motor load controller on the grinding operation, Ralston Purina Co. has solved these problems. A relay within the controller measures the flow of electrical current and controls the power unit (see drawing). Power unit positions the feeder to maintain the proper rate of flow of material to the mill. If amperage decreases, gates are automatically opened, increasing feed to mill. Conversely, with an *increase*

Operator at Ralston Purina plant adjusts motor load controller to specific product being processed

Hammermills, with 70 hp drive motors, are located on floor below gate valves



Characteristic motor load curves. Curve No. 3 shows wide variations in current input to drive motor with the use of manual control of feed input to mill. Curve No. 2 shows performance when using a 2-position or "on-off" controller. It provides motor over-load protection only. Curve No. 1 is characteristic of operation with proportional plus floating action motor load controller. Note that drive motor is operating at full load rating during these tests.

in amperage, gates are lowered, decreasing the feed. This control automatically maintains a constant load on the drive motor, which is generally set at maximum load.

Power unit is equipped with a feedback piston which was designed to compensate for the time lapse — 10 sec. — between the change in feed input to the mill and the corresponding change in current input to motor driving it.

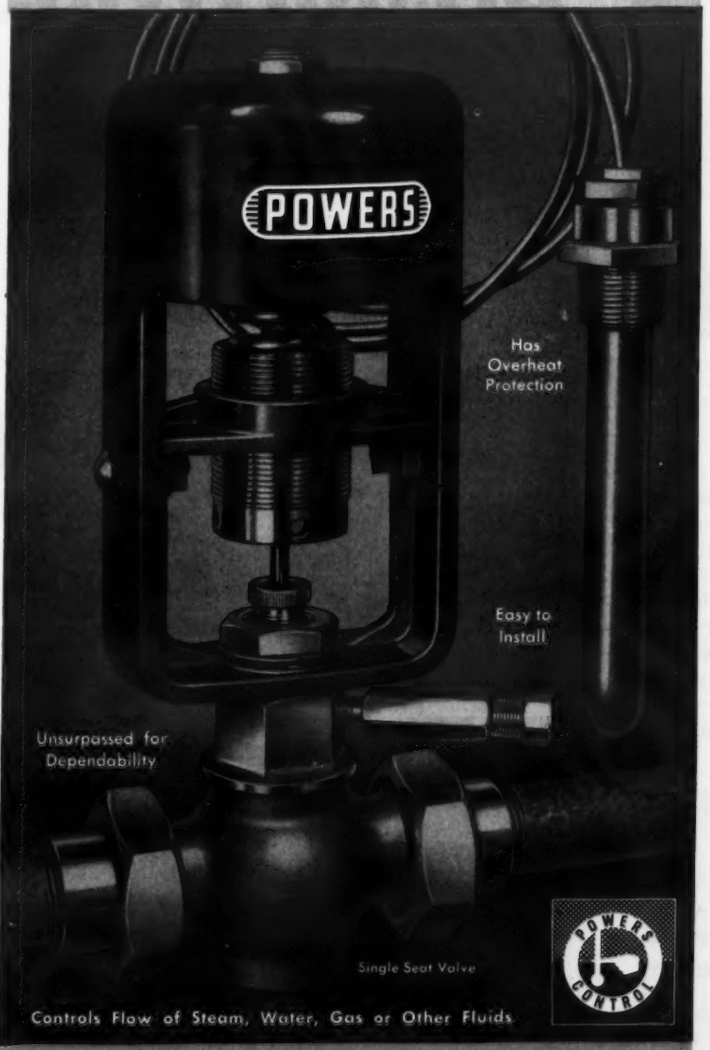
For establishing load on drive motor, which varies according to product being processed, controller has a set-point adjustment. Motor load is indicated on ammeter mounted in the cover of controller case. For oats ground by Ralston reading is 91 amperes (full load).

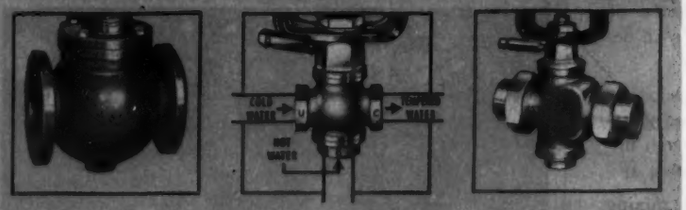
Results: Frequent wide and excessive changes in feed input have been eliminated and maximum production with stability and safety has been obtained. Operator simply adjusts controller for desired load on grinder motor. He then can go on about his regular duties without fear of mill plugging up from excessive feed.

(*Continued on next page*)

POWERS No. 11 Self-Operating TEMPERATURE REGULATOR

Automatically holds temperature constant at the right point.
Prevents losses caused by wasteful OVER-heating.

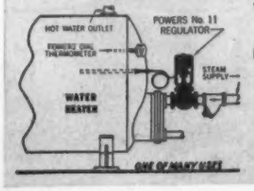




Various Valve Bodies and Inner Valves are available. Single and Double Seat Valves thru 2" have rugged bronze bodies with bronze union connections for quick, easy installation. Bulletin 329 gives information about all types.

Why It Gives BETTER CONTROL and Saves More Money

Often repays its cost 3 to 6 times a year when used on:



Water Heaters — Industrial Processes — Heat Exchangers — Fuel and Crude Oil Heaters — Air Compressors Diesel Engines

ONLY POWERS No. 11 REGULATOR Offers ALL These Advantages

- **Simple, sturdy construction.** Materials used are corrosion resistant.
- **Powers bellows has 50% more power** than used in the majority of regulators. The heart of a self operating regulator is its bellows. Powers with its 50% greater effective area gives better control and its durable 2 ply bellows outlasts ordinary single ply bellows.
- **Valve stem lubricator** with silicone grease aids easy movement of highly polished stainless steel valve stem and reduces drying out of packing.
- **BETTER CONTROL** results from Powers powerful bellows and minimum of valve stem friction.
- **60°F. temperature ranges** available with accuracy of ±1°F. on some processes and 2 to 3°F. on others.
- **Rugged bronze valve bodies with bronze union connections,** for single and double seat valves thru 2", reduce installation time and labor. Larger sizes have flanged iron body valves.
- **Powers Nationwide Service and 24 Hour Delivery** in the U.S.A. are important time and money saving advantages.

- **Indicating Regulator** with easy to read 4" dial thermometer helps adjust the regulator and check temperature at the bulb. Various dials and ranges are available.

Right type and size of valve is important for good control. May we help you make the right selection? Benefit from POWERS more than 60 years experience with self-operating regulators.

Call our nearest office or write us direct for Bulletin 329.

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Skokie, Ill. | Offices in Chief Cities in U.S.A.
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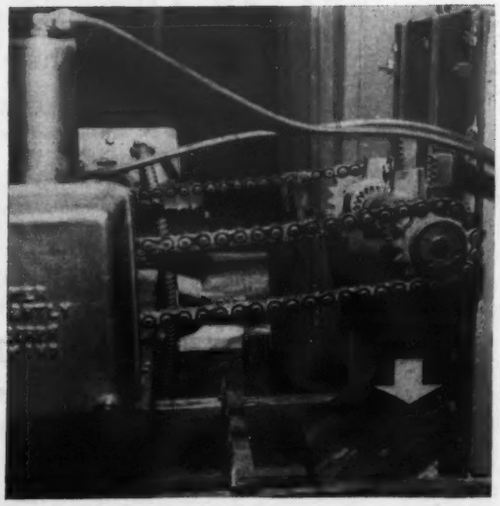
Automatic Temperature and Humidity Control

Established 1891

When inquiring check FP 3255 opposite last page



View of gate valves (arrow shows gate is split in order to feed two mills at the same time) open wide to allow maximum amount of material to flow

(*Continued from preceding page*)

Ralston Purina Co. utilizes a split gate (see photo) which not only permits feeding two grinders at the same time but acts as a guide in determining the efficiency of the mill. If, for example, more feed material is going to one mill than the other, it is an indication that one mill needs maintenance.

(Amptrol motor load controller, model MLE, is a development of The Hays Corporation, Dept. FP, Eighth St., Michigan City, Ind. . . . or for more information check FP 3256 opposite last page.)

Tomato juice salted automatically, continuously with bulk salt

Controlled flow rate of both salt and juice yields uniformly salted product

A leading producer of canned tomato juice now salts its juice continuously, using a system based on controlled flow rates. Former practice consisted of passing the open, filled cans under a dispenser designed to drop a salt tablet into each can.

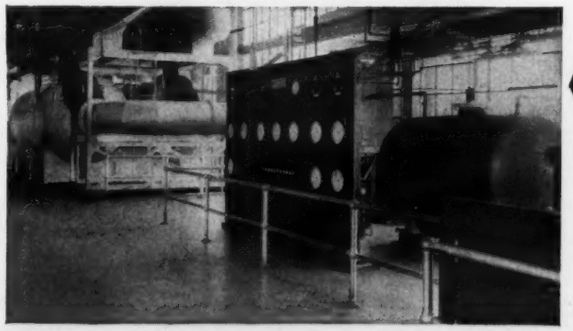
The dispenser was not very reliable. Occasionally several tablets were dropped into one can; and sometimes a dozen or more cans would pass through unsalted.

System now used consists primarily of a mixing vessel, liquid flow rate controller, and gravimetric salt feeder. The strained, uncooked juice passes through a sanitary flow meter, which transmits electric signal to recorder-controller. This instrument regulates a pneumatic control valve. Rate is controlled

WHAT'S NEWS AT BRISTOL . . . WHAT'S NEWS AT BRISTOL

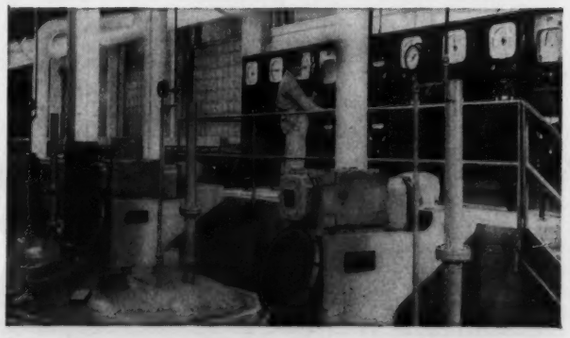
Bristol... automation... and you

Magic word, automation. Or push-button operation. It's a breath-taking concept, too – plants running practically unattended.
Breath-taking – but not *new*.



BRISTOL COORDINATED CONTROL SYSTEM automatically controls operation of "Columbia" Activated Carbon Solvent Recovery Plant at the New York Daily News. Similar control systems are used in many other solvent recovery plants designed and supplied by Carbide and Carbon Chemicals Company, a Division of Union Carbide and Carbon Corporation.

BRISTOL'S "MECHANICAL BRAIN" is the leader of the Coordinated Process Control System . . . accurately coordinating all the variables, including mechanical operations, so that each phase of the process takes place in proper sequence.



AUTOMATION is often thought of in terms of plans or even dreams; here at the Buffalo Foam Rubber Products Plant of the Dunlop Tire and Rubber Corporation, it is a reality. This automatic plant, designed and built by Mechanical Handling Systems, Inc., Detroit, uses Bristol Dynamaster® Electronic Instruments and Automatic Controllers as part of a process employing today's most advanced automatic production techniques. The result – greater efficiency and productivity, lower costs, improved product, and stronger competitive position.

THE WORLD'S LARGEST COAL CLEANING PLANT employs automation in lubricating system. The Hanna Coal Co., Adena, Ohio, uses *Bristol Controls and Recorders* in its fully automatic time-controlled centralized system for mass lubrication. This system promotes safety and, above all, insures positive delivery of the right lubricant in the right quantities at the right time to all bearings, regardless of operating conditions.

Twenty-one years ago . . .

'Way back in 1934, The Bristol Company led the way in the field of automation by developing the Bristol Systems of Coordinated Process Control.

These systems automatically controlled and coordinated all of the variables and operations of a process—such as the time of operation of valves, pumps, blowers, dampers, and the control, at a definite value or according to a time program, of variables that affected the uniformity, quality, cost, and yield of a product — such as temperature, pressure, liquid level, flow, pH, humidity, and speed.

RESULTS: They eliminated variations in processing that caused inefficiency — cut down rejections and waste — insured product uniformity — helped cut processing time as much as from 10 days to less than 30 minutes. And these systems quickly paid for themselves.

A REVOLUTIONARY CONCEPT: They brought automatic plant operation to a startling reality and were hailed at the time as a fundamentally new development — which would in time revolutionize manufacturing.

Today, Bristol Coordinated Control Systems are used in the chemical, oil refining, rubber, tobacco, textile, steel, metal working, food, paper, the automotive industries, and many others. They are so completely automatic that it is only necessary to push a button to start up, another to shut down.

The modern solution to processing and manufacturing control problems

Bristol's System of Coordinated Process Control is made possible only by the following unique combination of facilities, which have been developed during 66 years of building and applying thousands of automatic control systems and instruments in practically all industries:

1. The complete line of modern Bristol Automatic, Controlling, Recording, Electronic, and Telemetering Instruments, representing some of the most advanced ideas in instrument engineering.
2. Bristol's Fully-Automatic Time-Cycle Controllers or "Mechanical Brains".
3. Bristol's ability to combine electronics and the mechanical phases of automation.
4. The ability and facilities of Bristol's engineering staff, gained by long experience and Bristol's pioneering work in the field of automation.

Bristol Application Engineering is at your service:

Our application and field engineers are ready to solve control problems involving automation and Coordinated Process Control Systems by working jointly with your research, development, and plant engineers.

Have you an automation problem?

Our application engineers and nation-wide group of field engineers would like an opportunity to work with your technical staff on any problems of automation for which Bristol Controlling and Recording Equipment and Bristol Coordinated Control Systems appear to be the solution. 5.3

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POINTS THE WAY IN HUMAN-ENGINEERED INSTRUMENTATION

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

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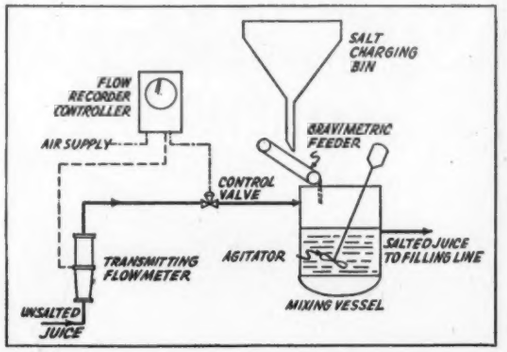

Schematic diagram of process for continuous salting of tomato juice

at about 40 gpm. Juice then flows into mixing vessel, together with salt from gravimetric feeder. The two are thoroughly mixed by an agitator in the vessel. Salted juice then flows through an overflow in the vessel to can-filling operation.

(Flow meter used is a Flowrator Meter, manufactured by Fischer & Porter Co., Dept. FP, Hatboro, Pa. . . . or for more information check FP 3258 on handy form opposite last page.)

Is process control a treadmill?

If you've been looking for new ideas for process control and instrumentation, you'll want to be sure to see FOOD PROCESSING's Featured Instrument Section in September. FP editors plan to bring you a Buyers Guide to Indicators, Recorders, and Controllers along with many case histories. Watch for it in September FOOD PROCESSING.

80 BUSHELS OF PICKLES AN HOUR PROCESSED BY THIS SIMPLICITY 3′ x 8′ MODEL "C"

This Simplicity 3′ x 8′ pickle screen has greatly improved the quality of both large and small pickle slices for one of the largest pickle processors. It is removing end slices, half slices, very thin slices and broken slices from 80 bushels of pickles per hour, fed onto the screen from a Urschel slicer set for 1/10″ to 3/8″ slices. This leaves for hand picking only those unbroken slices with the centers missing.

The unique, gyrating action of the Simplicity Screen performs a more accurate separation by keeping the slices in constant agitation . . . on end and turning over. The width of the machine (a full 3 feet with a total screening area of 24 square feet) contributes to an even, thin bed of material for more complete removal of undesirable slices. The unit requires little supporting structure and may be mounted on a wooden frame. This is due to the lack of vibration in the main frame. The Simplicity patented Balanced Assembly concentrates the vibration on the entire screening surface.

Whether your food processing problem concerns pickles, vegetable dewatering or sizing, tomato processing, sewage screening, or conveying bulk materials . . . a Simplicity unit is your answer. Write today for more complete information.

Simplicity
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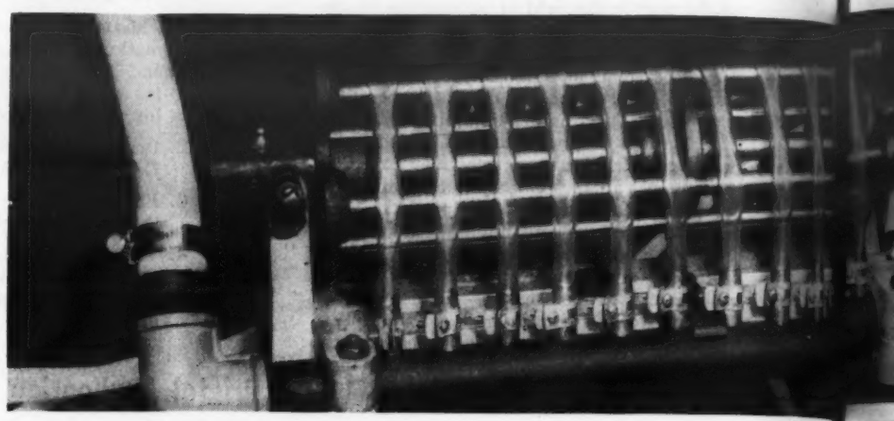
SALES REPRESENTATIVES IN ALL PARTS OF THE WORLD
FOR CANADA: Simplicity Manufacturing Limited, Guelph, Ontario

When inquiring check FP 3259 opposite last page



Plastic hose 'pump' meets need for

accurate, low-cost application of liquid fertilizers

Involves no parts exposed to corrosive action—eliminates need for aluminum tanks and spray nozzles

H. A. ARNOLD
CORDELL HATCH
Agricultural Engineering Dept.
Tennessee Experiment Station
as reported by **FP Staff**

Two difficulties have so far discouraged wider use of liquid fertilizers. These are high cost of presently available application equipment and use of expensive aluminum storage tanks. Both obstacles are now overcome with the development of a simple and ingenious plastic hose "pump". This unit has no inside moving parts to rust or corrode, and involves no nozzles or cut-off valves. Second-hand metal drums may now be used to carry supply of liquid fertilizer. The pump is simple and foolproof (see photos). Sections of plastic hose are stretched over a reel made up of four stainless steel roller-rods rotating in ball bearings.

Liquid fertilizer goes direct from drum tank to pipe which is tapped so that each hose section is kept supplied. Action of roller squeezes fertilizer through the hose lines, each of which is actually a separate pump. Pressure of rollers on hose stops flow as soon as tractor is stopped, eliminating need for cut-off valve. Rate of application is accurate, and is governed by sprocket combinations, varying the number of hoses used, or feeding two or more pump hoses into each outlet line. Pump may be operated from a ground wheel drive assembly, or from an axle sprocket drive on most farm equipment.

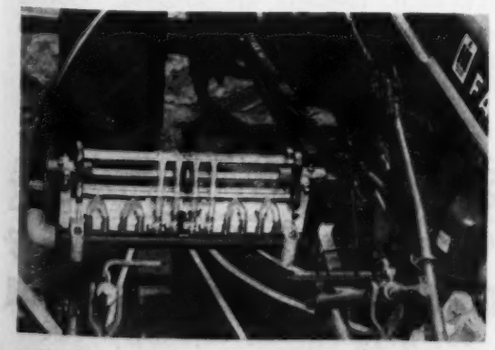
Based on field observations the hose pump is reported to do a superior job of applying solutions with actual cost of equipment being about one-eighth that of commercial units available to date. In actual use, hose has lasted about 400 hours. Cleaning at end of season is accomplished by merely running water through each hose section. Included with each reel assembly is 75′ of hose which can be cut to size and attached with thumb screws.

Hose pump was invented by H. A. Arnold at the University of Tennessee, modified by USDA and North Carolina engineers.

(Plastic hose pump, including 75′ of hose, groundwheel drive assembly, and mount for drum is available from the exclusive assignee, Liberty Mfg. Co., Dept. FP, Red Springs, North Carolina . . . or for more information check FP 3260 on handy form opposite last page.)

Rotating reel is heart of pump providing "squeeze" —like that exerted in milking a cow—that forces liquid fertilizer through plastic tubing

Hose pump, installed at rear of tractor, is powered by drive wheel assembly. Use of ordinary steel drum and wooden spreader boom for tube outlets contributes to low total cost



Here, pump is mounted on side, and driven from planter drive, on this particular tractor. Thus, seeding and fertilizing can be done in one operation

DAY OR NIGHT

PICK SWEET CORN WHEN THE TIME IS RIGHT!

NEW '55 FMC SWEET CORN HARVESTER LETS YOU PICK 'ROUND THE CLOCK —WHEN THE CORN AND YOUR PLANT ARE READY

Save minutes and dollars with the rugged FMC Sweet Corn Harvester, the only machine specifically designed for sweet corn harvesting. Reliability and dependability are proved by performance records season after season, under all conditions—in heat, dust, rain, rough fields—in night and day operation.

Minutes mean quality, for corn must be picked when it's ready! Picking delays and interruptions common to hand picking operations downgrade product quality and disrupt plant schedules. That's why each season finds more growers switching to FMC Sweet Corn Harvesters, always dependable, always on the job when there's picking to be done.

Minutes mean profits. One FMC Harvester replaces 10 to 15 hand pickers, with a reduction of up to 57% in picking costs! There's a 10% bonus in increased cut-off weight—up to 10% more corn per ton over hand picked corn. In addition, smooth, more profitable plant scheduling is assured.

1st Choice of Canners, Growers, Operators!

- Cuts picking costs up to 57%
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- Works day and night, under all weather conditions
- Reduces labor problems—does the work of 10 to 15 hand pickers
- Mounts on most tractors
- Simple operation, with all controls convenient to driver
- Sturdy construction throughout for trouble-free operation, lowest maintenance

Now is the time to order your FMC Sweet Corn Harvester for consistently higher yields at lower costs.

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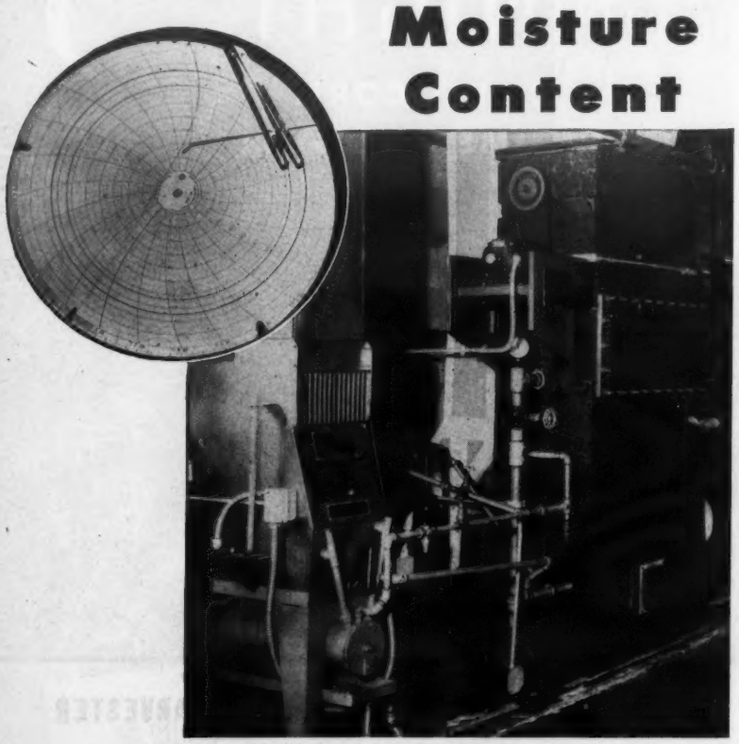
Key to food equipment

When inquiring check FP 3261 opposite last page

EXACT CONTROL of Moisture Content



. . . To Improve Your Product or Protect Your Materials or for Processes or Tests

● This Niagara Air Conditioning Method dries air directly and measurably, using a moisture-absorbing liquid spray. It makes humidity control a separate function from lowering or raising temperatures and gives you precise control with thermostats alone; no moisture-sensitive devices are needed. You have simpler, more trustworthy, less expensive control instrumentation. Niagara precise-control installations have the best record for reliability.

Niagara Air Conditioning provides you with any temperature and relative humidity you need. Using "Hygrol" absorbent, it is not expensive to operate, saving the refrigeration commonly used to condense moisture and making re-heat unnecessary in most cases. It gives large capacity with compact, easily-maintained equipment. Ask for Descriptive Bulletins #112 and #121. Address Dept. FP.

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crop production

40 'new' varieties offered in vegetable seed catalog

About 40 new or recently introduced varieties are now listed for the first time in new edition of well-known catalog. These varieties include new peas such as Pixie and Nome in the Alaska group and, in the wrinkled seed group, Early Sweet II, Freezer 33, Freezer 37, and Laxton 8. In beans, there is Topmost, one result of an extensive program of breeding from which other introductions are to be made. Three new sweet corn hybrids are: Asgrow Golden 50, Asgrow Golden 60, and Asgrow Cogent 132.

"Descriptive Catalog of Vegetables for Processing, No. 18" is issued by Associated Seed Growers, Inc., Dept. FP, 205 Church St., New Haven 2, Conn. When inquiring specify FP 3263 on handy form opposite last page.

Picks 20 acres sweet corn per day; keeps ear damage low

Low-cost two-row corn picker, especially suitable for use by canneries, is easily attached or detached. It is designed for use on Farmall M tractors, including Super MTA and also Super MTA diesel tractors. Operating and design characteristics are described in bulletin.

Features include snapping rolls embodying new principle. Star-shaped fluted snapping rolls strip stalks without touching ears. The snapping units are raised and lowered by hydraulic Farmall Lift-All. Drive is from main drive jackshaft by heavy-duty roller chains. Operating power is taken direct from a sprocket on the tractor belt pulley shaft. Movement of ears through machine is positive and fully controlled throughout. Center divider mounted on tractor front wheel axle allows sharp steering to right or left.

Bulletin on #22 sweet corn picker is issued by International Harvester Co., Dept. FP, 108 North Michigan Ave., Chicago 1, Ill. Specify FP 3264 opp. last page.

SELECTROL weighs, sorts and counts every package

Operators of food packaging plants are finding SELECTROL the best money-making machine in their operation. It eliminates over-weights—saves product and eliminates human error by automatically weighing and sorting every package.

SELECTROL fits into any production line, weighs in motion, handles your products without spillage, without interruption to flow. Out of tolerance units are smoothly diverted from the line for correction. Immediate labor savings result, since all products meeting your predetermined weight tolerance require no further handling or checking.

SELECTROL tolerances are adjustable. Rejection accuracy can be held to 1 gram at speeds up to 100 packages per minute.

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When inquiring check FP 3266 opposite last page

BRIEFS from contemporary publications

Here's a quick look at articles appearing in other technical and business magazines . . . selected by the Editors

Refinements in sterilizing process calculation

Normal methods of calculating the sterilizing value of a heat process add up the killing values of all the small units of time during which temperature may be assumed constant. The killing value of a given time unit in the middle of the process is added to the killing power of all the preceding time, just as if the starting bacterial load were still present and ignoring the kill of the earlier part of the process. This leads to retort times longer than they need to be. A new procedure is given to correct for this effect. 11 pages, 2 graphs, sample calculation is presented. (*"Food Research", May-June* 1955, *page* 226)

Surface darkening in sliced beets

Darkening of the cut surfaces of sliced beets was shown to result from underscalding. The light scalding caused cell damage to permit oxidizing enzymes to operate, while heavier scalding inactivated the enzymes. Immersion in salt water had little effect in retarding the darkening, but a 1% ascorbic acid solution prevented darkening for the first hour. 6 pages, 2 color photos, 1 table, 1 flow diagram, 3 graphs. (*"Food Technology)", June* 1955, *page* 3-8)

Food and Drug inspections under the new amendments

The Food and Drug Act as currently amended requires processors to permit plant inspections. A 2-part article by a former supervisor tells what the inspectors look for and how in checking sanitary practices. The nine most frequent causes of poor sanitation are listed. 5 pages. (*"The Canner", May* 30, 1955, *page* 11 *and June* 13, 1955, *page* 24)

Heat unit control of vegetable crops

A review article discusses the use of heat units (degree-days) for scheduling the planting, treatment, and harvest of various vegetable crops. Specific applications are discussed in detail, and both advantages and limitations are given. 8 pages, 3 tables, 9 graphs. (*"Food Technology", April* 1955, *page* 202)

Aids to standardizing citrus juice flavor

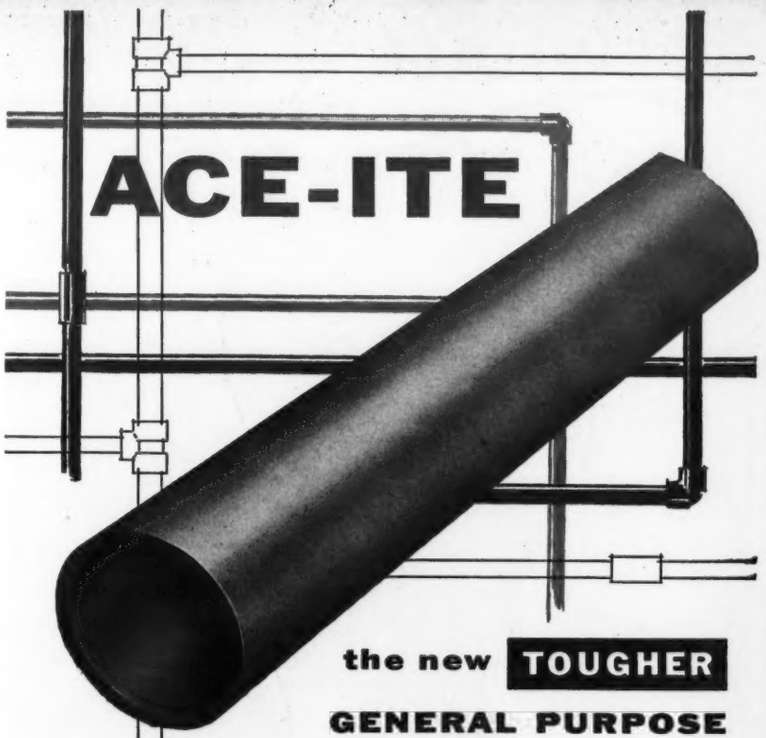
In blending citrus juice batches to get desired Brix values and Brix/acid ratios, calculations are helped by sets of formulas and tables or, alternatively, by nomograms, both of which are given along with explanations and instructions. 9 pages, 3 nomograms, 2 graphs, 4 tables. (*"Food Technology", April* '55, *pg* 155)

Cake mix quality depends on moisture level

Storage tests on four types of cake mixes (white, yellow, gingerbread, devil's food) showed that for satisfactory keeping quality, the flour going into the mix should have a moisture content under 7.5%. The main trouble at higher moistures is loss of carbon dioxide from the leavening. 10 pages, 9 tables, 91 photos. (*"Food Technology", June* 1955, *page* 276)

Industrial refrigerant properties

A semi-technical discussion of the various refrigerants now widely used gives a key to their trade names and numbers as well as sketching their most important properties. 5 pages, 3 diagrams, 2 charts, 4 tables. (*"Industrial Refrigeration", April* 1955, *page* 34)



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ACE-ITE is a new moderately priced rigid plastic pipe with exceptional impact strength and toughness . . . handles most corrosive fluids in your plant at moderate temperatures and pressures.

For piping most inorganic acids, salts, alkalis and many organic chemicals, it's the equal of plastics that cost far more. ACE-ITE maintains good strength, rigidity and chemical resistance from minus 40 deg. F. to 170 deg. F. Light in weight, it is odorless, tasteless, non-contaminating. Saves cost of painting, immune to electrolytic corrosion and bacteria. Available in pipe sizes from ½" to 6", standard and extra-heavy, with wide variety of fittings.

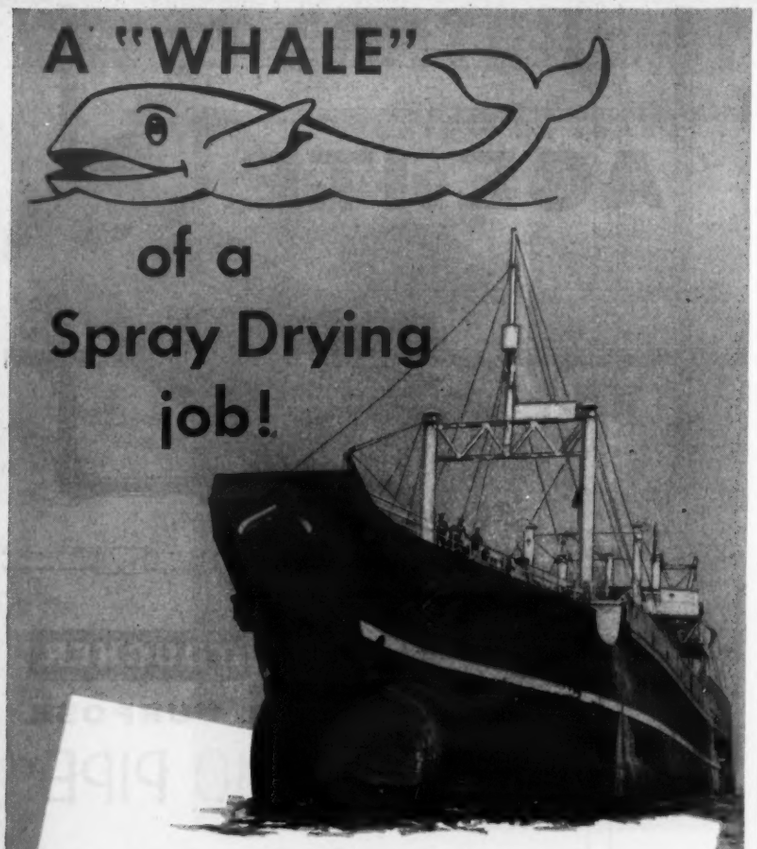
ACE-ITE is only one of eight types of rubber and plastic pipe now offered by American Hard Rubber Company. Write today for free technical Bulletin 80.

ACE rubber and plastic products

AMERICAN HARD RUBBER COMPANY
93 WORTH STREET • NEW YORK 13, N. Y.

When inquiring check FP 3267 opposite last page

A "WHALE" of a Spray Drying job!



Yes, we are literally doing this; spray drying whale components on a modern whaler in the Antarctic seas.

A wealth of spray drying experience is available through *Nerco-Niro* . . . and whether your requirements are a few pounds or many tons per hour we invite you to consult a Nerco-Niro engineer.

Pilot plant and laboratory facilities are at your service for research and development work.

Custom drying at plant size capacity is just one more service we offer, but one that enables you to meet present production demands while your own plant is tooling up.

Write for Bulletin No. 226

Nichols Engineering & Research Corp.

Nerco-Niro Spray Dryer Division

70 PINE ST., NEW YORK 5, N. Y.

Indianapolis Montreal

NERCO NIRO® *Spray Dryers*

When inquiring check FP 3268 opposite last page

Sara Lee Kitchens' high butter, fresh milk, whole egg formulas yield premium-priced but highly-popular cakes. National distribution is now being achieved as . . .

blast-freezing preserves cake quality; allows centralized production

By freezing its coffee cakes and cheese cakes, the Kitchens of Sara Lee in Chicago has been able to gain distribution in principal cities in 34 states from coast to coast. Formerly these products enjoyed considerable popularity only in the Chicago market, and Sara Lee was virtually forced by popular demand to find a way to widen distribution. Freezing was recognized as the answer since frozen cakes could be held for weeks without quality loss, and thus could be shipped anywhere.

Sara Lee attributes success of its products to premium ingredients. Use of 93-score

Interior view of blast freezer tunnel, which is cooled by self-defrosting fan unit

Rack loaded with coffee cakes is pushed into blast freezer vestibule. Cased cakes at left are shown at entrance to large holding room

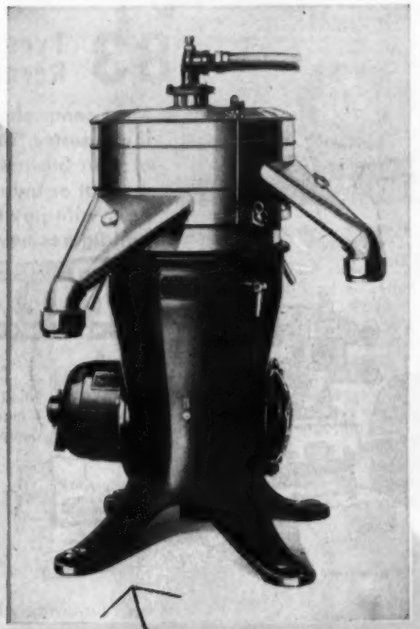
butter as the only shortening, fresh milk, whole eggs, and other high-quality ingredients means that the cakes must also command a premium price (in some instances, nearly double that of competitors). This price has not been a deterrent, however, as sales continue to rise. Sara Lee now operates on a 24-hour, 3-shift basis in order to keep up with demand.

Coffee cakes are baked (and sold) in aluminum foil pans. After baking and icing cakes, pans are covered with laminated paper. Cakes for national distribution are immediately placed on racks (accommodating about 150 coffee cakes) and put in blast freezer. Temperature here is 0°F, and cakes

(*Continued on next page*)

As finished cakes come off line, they are placed in racks, which are subsequently rolled into blast freezer

HOW MUCH TOO MUCH IS "STOP-AND-GO" COSTING YOU?



"Stop-and-go" separating by means of filters and settling tanks is costly, time-wasting . . . and *unnecessary*.

De Laval Centrifugals streamline production by making separation, clarification and concentration *continuous* processes.

De Laval does in seconds what would otherwise take *minutes* or even *hours* . . . saves *time* . . . saves *money*!

What's equally important, in many processes De Laval Centrifugals also improve the product by doing a *more thorough* job of separation or clarification.

Let us show you exactly what De Laval Separators and Clarifiers can do for you.

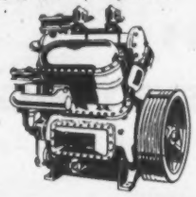
DE LAVAL
for faster processing systems

THE DE LAVAL SEPARATOR COMPANY Poughkeepsie, New York • 427 Randolph St., Chicago 6 • DE LAVAL PACIFIC CO. 61 Beale St., San Francisco 5

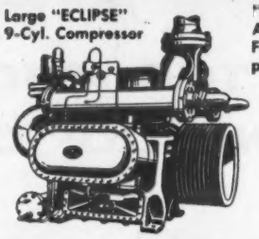
When inquiring check FP 3268A opposite last page

Open-drive Low Pressure Units, ¼ to 15 Hp.

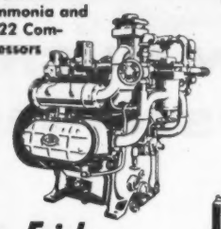
"ECLIPSE" Compressors, 2, 3, 4, 6 or 9 Cylinders

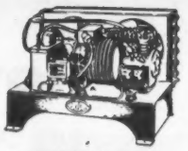


Large "ECLIPSE" 9-Cyl. Compressor

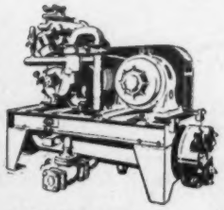


"ECLIPSE" Ammonia and F-22 Compressors





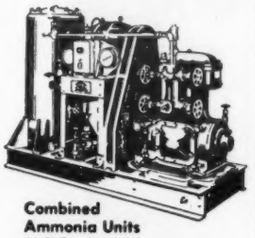
Accessible-Hermetic Units, ¼ thru 7½ Hp.



"ECLIPSE" Low Pressure Units in 5 Sizes

83 TYPES AND SIZES OF *Frick* REFRIGERATING MACHINES

Most comprehensive line of compressors in the Industry. There's one to meet the needs of your business exactly. Handle any commercial or industrial load, at any temperature, with any refrigerant! Get the full facts and figures now: write, wire or phone

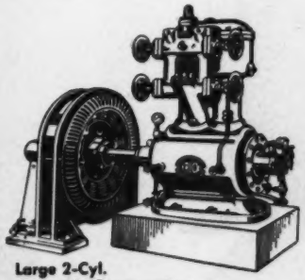


Combined Ammonia Units in 3 Sizes

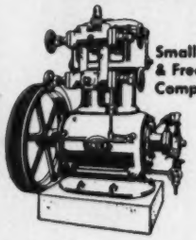
DEPENDABLE REFRIGERATION SINCE 1882

FRICK CO.

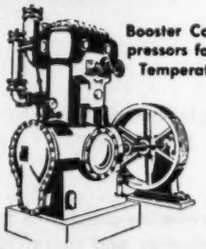
WAYNESBORO, PENNA. U.S.A.



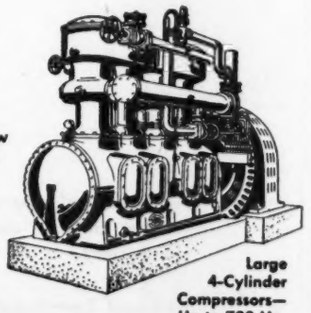
Large 2-Cyl. Ammonia Compressors



Small Ammonia & Freon-22 Compressors.



Booster Compressors for Low Temperatures

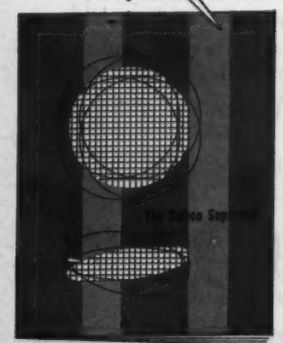


Large 4-Cylinder Compressors—Up to 700 Hp.

When inquiring check FP 3269 opposite last page

Send for new 22-page

SCREENING CATALOG



Photos, drawings, detailed specifications of equipment now successfully screening

241 different materials

wet and dry
coarse and fine
heavy and light.

Southwestern Engineering Company
4800 Santa Fe Ave., Los Angeles 58, Calif.
Please send Catalog No. 47-4

name *title*

company

address

city *zone* *state*

When inquiring check FP 3270 opposite last page

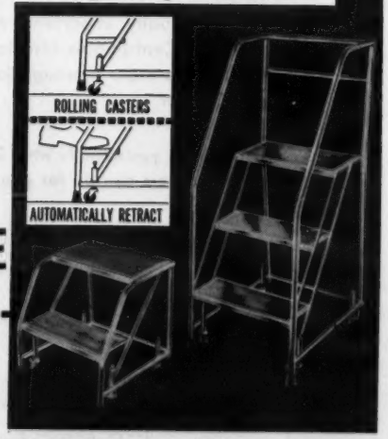
NEW... ALUMINUM Safety-Step LADDERS

LIGHT

STRONG

NON-CORROSIVE

1 TO 4 STEPS



Sturdy Ballymore Safety-Step Ladders are now available in 7 new feather-weight, non-corrosive aluminum models . . . for average work levels up to 8' high. Ladders roll easily on ball-bearing casters . . . lock automatically to floor when you step on. All-welded construction gives maximum strength.

Write today for free catalog sheet to Ballymore Company, Wayne 19, Pa.

Ballymore SAFETY LADDERS

BALLYMORE LADDERS

When inquiring check FP 3271 opposite last page

(*Continued from preceding page*)

are held 4 to 6 hours. Internal temperature of cakes is lowered to less than 15°. Cakes are then removed, cased, and placed in holding room, which is held at 10° or less.

Freezers are large, walk-in type. Blast freezer is cooled by self-defrosting fan unit, holds approximately 4000 coffee cakes. Holding room accommodates 20,000 cakes. Products are generally held 4 to 10 days, then shipped to local distributors in refrigerated trucks. Cakes are sold from freezer cabinets in retail stores.

Cheese cakes are processed in same manner, except that freezing temperatures must be somewhat higher, since the cheese breaks down at low temperatures. These cakes are frozen and held at 20°F or slightly less.

(Entire freezing system was designed and installed by Refrigeration Systems, Inc., Dept. FP, 646 W. Washington Blvd., Chicago, Ill. . . . or for more information check FP 3272 on handy form opposite last page.)

Freezer rack holds 1600 lb poultry; tier legs adjust automatically to different size products

Freezer racks come in stacks, consisting of one bottom shelf with skid legs and seven freezer shelves with adjustable legs. Latter adjust automatically to accommodate size of product. One set of racks will hold up to 1600 lb of poultry. When empty, racks can be stored in spiral fashion (see photo), considerably cutting required storage space. Fork trucks can easily move these spiral stacks.

Rack construction is one piece. Bottom shelves are designed for standard lift trucks with forks 4" high and 4' long. Shelf bottom material can be copper, galvanized copper, fiber board, or metal mesh. Standard rack size is 48" x 36".

(Freezer racks are manufactured by J & J Industries, Dept. FP, 34 N. 7th St., Barron, Wis. . . . or for more information check FP 3273 opp. last page.)

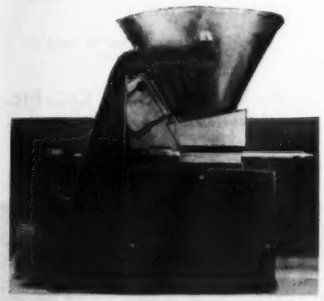
Photo at right shows how stacked racks occupy minimum storage space. Loaded rack is seen at left

Uniformly feeds dry solids with accuracy of ±1%

Uses: For continuous, accurate addition of powdered material to processing or blending operation.

Features: Unit feeds nearly any powdered material with accuracy of ±1% by actual weight, minute-to-minute in steady stream. It functions with equal precision with granular or crystalline materials. Feeder can be built in any capacity size from ounces to tons per hour.

Description: Feeder employs volumetric metering, supplemented with density control. Vibratory flow assures complete filling and emptying of measuring element, eliminates erratic air entrapment.



Feeders are available in capacities from ounces to tons per hour

Unit is driven by fractional hp synchronous motor. Speed and feed adjustments are made by micrometer motion, with dial calibrated to 400 divisions.

(Vibra Screw feeder is product of Vibra Screw, Dept. FP, P.O. Box 25, Glen Ridge, N.J. . . . or for more information check FP 3274 on handy form opposite last page.)

NEXT MONTH

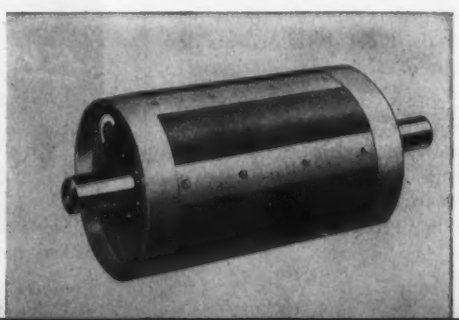
Read how Cott Beverage gains complete uniformity in its products using two-stage homogenizers

For more information on product at right, specify FP 3275 . . . see information request blank opposite last page.

OLD IRON PANTS AND THE MAGNET! A lady from yesterday with a metal-ribbed girdle wouldn't be safe next to an Eriez Permanent Magnet. She might easily be "hung up" by the powerful Alnico V action. This idea of herculean power is practically applied in industrial processing lines. Magnets convey and control metals, and remove dangerous tramp iron preventing fires, machinery damage and product contamination. *All Eriez Magnets are non-electric, self-contained. They operate without any wires or attachments. Best of all their magnetic power lasts a lifetime. The first cost is the last.*

MAGNETIC IDEAS FROM ERIEZ

ERIEZ PULLEY WATCHES YOUR BELTLINE. The idea of this Eriez Magnetic Pulley is to reduce tramp iron . . . tramp iron which is hidden in wet or dry material passing on conveyor belts of rubber, leather, canvas, stainless steel, etc. Pulley sizes range from 4" to 30" diameter, in belt widths from 4" thru 72". The rugged construction and powerful magnetic strength of Eriez Pulleys give you trouble-free operation and efficient protection against tramp iron damage to costly crushers, grinders, pulverizers, stokers, etc. Want more information on this product? . . . request Bulletin 501.



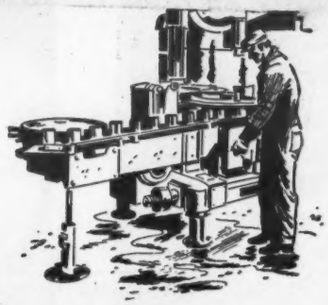
ERIEZ

ERIEZ GRATE MAGNET DOING SWEET JOB. *Purity* is the watchword at Boweys, Inc., Chicago concern making quality chocolate powder and syrups. Fine iron contamination and an occasional nut or bolt (tramp iron) could cause product contamination and damage the mills that grind to extremely close tolerances. To protect both product and machinery, an Eriez Permanent Grate magnet was installed in the feed hopper of a Raymond mill. It has proved very efficient; the foreman insists he would not run his mills without it. Eriez Grate magnets are so successful at removing fine bits of metal from free-flowing processing lines, that a recent quality-control test by an independent laboratory showed a single Eriez magnet removed 93% of 100-200 mesh iron.

ERIEZ DRUM MAKES BORING JOB PAY OFF. W. F. Jobbins Co., Aurora, Ill., recently solved a problem that was both expensive and troublesome. Valuable aluminum chips were being lost in iron tailings. Previously, the tailings were collected during the week and re-run on a double deck separator on the weekend, in order to salvage the aluminum from the waste tailings. Now, with an Eriez Permanent Magnetic Drum, the tailings are so free of aluminum there's no need to re-run them. This process saves 4 to 8 man hours daily. The magnet functions so efficiently, the company reports, that loss of aluminum to iron tailings is less than lab figures show it should be! Want to know what an Eriez Drum can do for you? Request 6-page Bulletin B-601.

Eriez' free booklet "Magnetic Ideas" can help you. Send for it without obligation. Address: Eriez Manufacturing Company, 75V Magnet Drive, Erie, Pa. Or, on your specific request Eriez' factory-trained field men backed by Eriez' laboratory and engineering know-how will be happy to study your particular problem, make a plant survey and offer helpful "Magnetic Ideas".

The FOOD PROCESSOR knows



. . . that he wants his products to meet high standards . . . to merit the stamp of approval from Government . . . and consumer.

Alert food processors are learning that there is a recognized stamp, too, for safety in floors . . . and that ALGRIP Abrasive Rolled Steel Floor Plate's protection against slipping on wet, greasy or oily floors has won it the valued safety approval of the Underwriters' Laboratories.

The food processing industry faces special safety-from-slipping problems, with grease, splashing around vats, and other hazards. Meat packing, for instance . . . with 9.98 disabling injuries per million man hours . . . is above the national industrial average of such injuries. Study of 517 food processing units showed a rate of 13.42 disabling injuries per million man hours—almost double the national industrial average of 7.44.*

Many such plants have found ALGRIP flooring's abrasive — deeply embedded and uniformly distributed — the answer to the slipping problem. It saves lost days for the worker . . . cuts insurance costs . . . helps pay for itself in dollars as well as human safety.

*National Safety Council

A.W. ALGRIP ABRASIVE ROLLED STEEL FLOOR PLATE

ALGRIP—*Approved for Safety by Underwriters' Laboratories.*

ALAN WOOD STEEL COMPANY
Conshohocken, Pa.

Please send A.W. ALGRIP Booklet AL-9

Name_____

Title_____

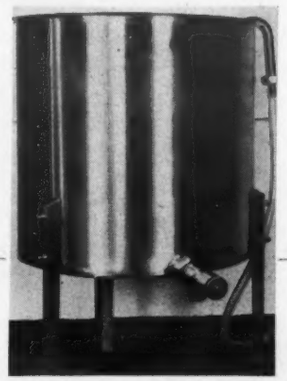
Company_____

Address_____

City_____ Zone_____ State_____

Other products: A.W. SUPER-DIAMOND Rolled Steel Floor Plate—Plates—Sheets—Strip—(Alloy and Special Grades)

When inquiring check FP 3276 opposite last page



Gooseneck holds hose

Designed to relieve a worker of the job of holding hose while filling a vessel, stainless steel gooseneck simply hooks over side of container while hose is slipped over opposite end. Gooseneck legs are of equal length. Short bend radius (2¼") allows liquid to run down side of vessel, minimizing foaming. Gooseneck comes plain, or with sanitary adapters for ½", ⅝", ¾", or 1" ID hose.

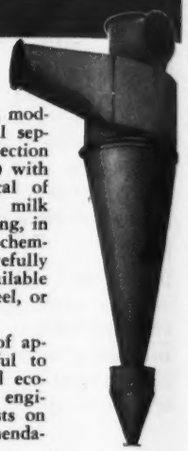
(Stainless steel hose gooseneck is produced by Terris Division of Consolidated Siphon Supply Co., Inc., Dept. FP, 22-24 Wooster St., New York 13, N.Y. . . . or for more information check FP 3277 opposite last page.)

Process uses of aluminum shown in 80-page book

Story of aluminum is told extensively in 80-page book. First section describes various process applications of this metal. Next section is dictionary of performance of aluminum with over 400 substances, supplemented by flow sheets for production of various materials. Final section covers design of aluminum equipment.

"Process Industries Applications of Alcoa Aluminum" is available on letterhead request from Aluminum Company of America, Dept. FP, 1501 Alcoa Bldg., Pittsburgh 19, Pa.

Solve your needs in **PRODUCT RECOVERY** with **Banister Dustmasters**



Dustmasters are scientifically designed, moderately priced cyclone type mechanical separators. They give you outstanding collection efficiency (in some cases up to 99.8%) with minimum power requirements. Typical of their many uses are in spray dried milk processing, in food component conveying, in vinyl resin manufacture, and in loose chemicals handling. *Dustmasters* are carefully manufactured for long life, and are available in hot rolled steel, monel, stainless steel, or aluminum.

Our wide experience and knowledge of applications can be tremendously helpful to you in getting the most practical and economical product recovery system. Our engineering laboratory will gladly run tests on your product and make specific recommendations.

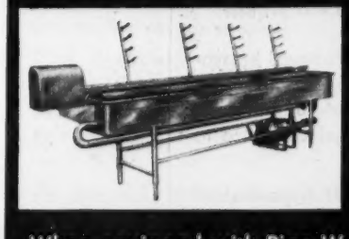
DUSTMASTER

Send for catalog or send us your requirements.

A. W. Banister Co., Inc.
21 Charles St., Cambridge 41, Mass.
System engineers & manufacturers since 1911

When inquiring check FP 3278 opposite last page

THE THRIFT KING
Lowest Priced Stainless Steel Pipe Tank



ONLY $385.00 F.O.B. Milton Full 10'-4" Tank

When equipped with Pipe Washing Machine and Recirculating Unit, this one machine does EVERY cleaning job!

★ Positive cleaning by Recirculation . . .
★ Positive cleaning by Soaking . . .
★ Positive cleaning by Brushing . . .
for all sanitary pipes, fittings and machine parts.

PLUS In-Place-Cleaning for permanent pipe lines, storage tanks, processing plate equipment and vats.

See your Supply Jobber, or send for Bulletin—Section No. 800

Girton Manufacturing Company
Milton, Pa.

When inquiring check FP 3279 opposite last page

Mechanical pastry icer frosts whole cakes, cake tops, or stripes on coffee cakes

Icing machine combines pump-operated icing tank and wire conveyor into single unit. Any type of free-flowing icing may be used for frosting cup cakes, loaf cakes, square and round cakes, as well as striping icing on other pastries. Insertion of optional bottom plate enables machine to enrobe cakes completely.

Open hopper icing tank permits refilling while machine is operating. Excess icing drops through wire conveyor back into hopper, from which it is recirculated. Wire is similar to piano wire, retains very little of the icing on its surface. Capacity of hopper is approximately 120 quarts, and is heated by 3000 watt immersion heater. Tank slides out from under machine, for easy cleaning.

(Frost-O-Fast Convey-Icer is manufactured by Basic Food Sales Corp., Dept. FP, Bancker St., Englewood, N.J. Check FP 3280 opposite last page.)

• "THAT'S INTERESTING"

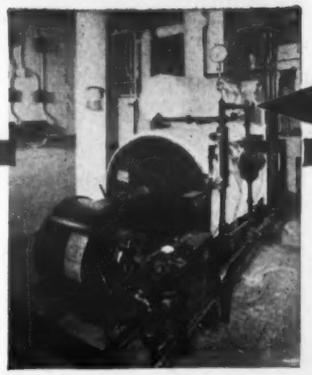
(*Continued from page* 2)

"Judging by the paper stacked here, I'd say we're over Washington, D.C., their capitol."

Paper maze

The Hoover Commission Task Force on Paperwork Management has estimated that Government offices are turning out about four million letters a day, or more than one billion a year. This volume, with each piece stacked one on the other, would reach 390 miles into the stratosphere, some 25 times higher than man has flown (see special editorial, page 5).

(*Continued on page* 85)



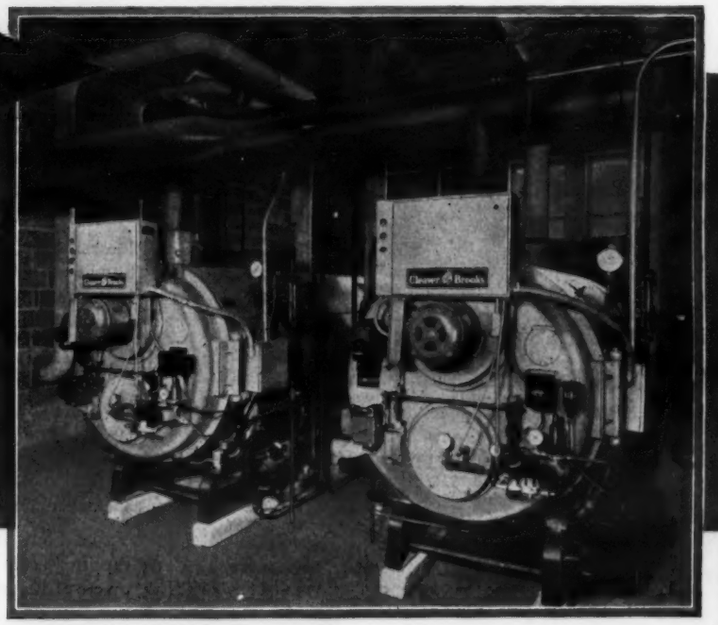
1931

Cleaver-Brooks pioneers big steam capacity in small space

This veteran 20-hp heating boiler — built by Cleaver-Brooks and installed in 1931 — is still in daily use. It is proof of the dependable service you can expect from Cleaver-Brooks' famed four-pass, self-contained boiler construction for any heating or processing need.

1955

Cleaver-Brooks is first again with the "CB"



- All main burner components are completely integrated for automatic operation.
- More boiler capacity in less space through elimination of extended burner assembly platform.
- Guaranteed 80% efficiency — Four pass construction. 5 sq. ft. of heating surface per bhp.
- 11 sizes — 79 models — 15 to 150 hp, (steam or hot water) for oil, gas or combination oil/gas use. Other models available through 600 hp.
- Complete (Boiler-Burner) unit approval by Underwriters Laboratories — conforms to ASME codes. Factory tested before shipment.

The "CB" is the most easily maintained package boiler on the market. Removal of only nine bolts (on the largest sizes) opens hinged doors for fast inspection, cleaning or service. This convenience has earned widespread praise of insurance firms.

BOILER users will quickly appreciate the surprisingly silent operation of the new forced-draft "CB" — *with the fan mounted inside the front hinged door.* Design avoids use of thin sheet metal housings and usual "chattering" and vibration.

Even greater combustion efficiency is yours with the new "CB" air-atomizing burner, with integral air compressor. All burner components are confined to the front head and the control panel is at operator eye level.

For complete facts on the boiler that's ahead in design, performance and economy, write: Cleaver-Brooks Company, Dept. J. 357 E. Keefe Ave., Milwaukee 12, Wis., U.S.A. Cable Address: CLEBRO — Milwaukee — All Codes.

Write for copy of latest "CB" Boiler Bulletin covering your size requirements — contains specification data to help you plan.

Cleaver Brooks

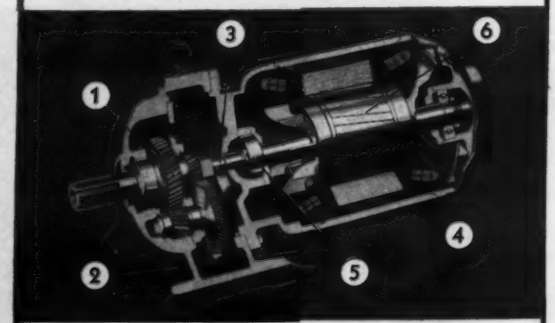
Originators of the self-contained boiler

When inquiring check FP 3281 opposite last page

to ***FOOD ENGINEERS, Howell suggests***

What to look for in Gearmotors

1. **Lifetime gearing.** The wear-resistance of gears depends, in good measure, upon their hardness. Howell's Duti-Rated Lifetime gears have a Rockwell hardness (52-60) substantially higher than the industry average.
2. **Compact, permanently aligned case.** Machine designers like the space-saving compactness of the Howell gear case. Pyramidal mounting puts support where it's needed — avoids the shaft misalignment possible when motor and gears have separate supports.
3. **Rugged, solid-shank pinion.** Howell's pinion design, with threaded coupling and self-broaching splines, makes a failure-proof shaft connection between motor and gears. No troublesome keys.



4. **NEMA—standard motors** give machine builders and users complete motor interchangeability, help them reduce inventories and simplify purchasing. Howell gearmotors give you this valuable feature — *with the new re-rated motors included!*
5. **Fully-protected bearings** insure longer motor life. Dirt can't enter Howell's double-shielded bearings either from inside or outside the motor, because they are seated in the end-plate cavities by dust-tight inner caps.
6. **Copper-clad rotors** mean better heat conductivity, stability at high temperatures and, as opposed to die-cast rotors, greater design flexibility to meet your particular motor requirements. *All* Howell motors have them.

Gearmotors Cut Costs. Actual savings achieved by Howell gearmotors over separate motor-plus-reducer-plus-coupling drives are available for your study. Just request "Gearmotor Savings Table" when you write for catalog.

WRITE FOR BULLETIN GM-1

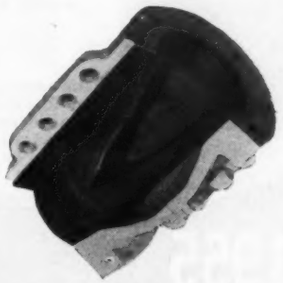
HOWELL MOTORS

OWELL Dual Rated motors

When inquiring check FP 3282 opposite last page

Flow is straight-through in valve for slurries, liquids, gases

Air or hydraulic pressure acts to constrict throat or choke it off completely



Control valve for solids in suspension

Uses: As a control valve for handling solids in suspension, acid slurries, and other balky materials.

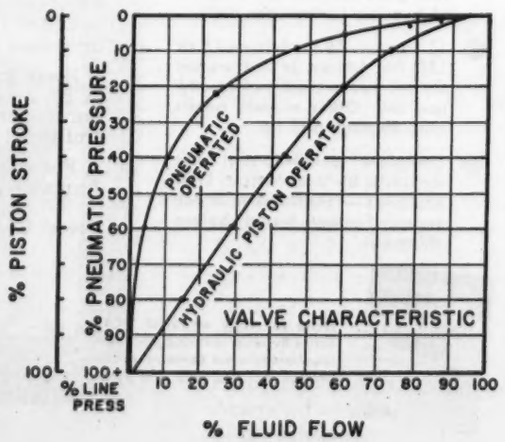
Features: Unit operates directly from instrument air line for low pressure service or through air booster relay for high pressure service. It operates by solenoid valve for timer program service.

Description: Air is forced directly into valve body's annular space between rubber sleeve and body itself. Air compresses sleeve to a closed position. Sealing area of valve is 50% of length of rubber tube and permits tight shutoff even with solids encased in tube.

Sleeve is made of pure gum rubber with reinforced multi-ply cords and withstands abrasive wear because of resilient characteristic of rubber. It is also furnished in butyl, Neoprene, and other special materials.

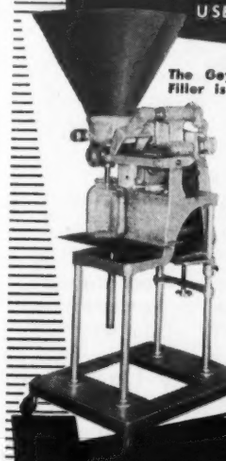
Valve body is cast iron and is available in sizes ranging from 1 to 24". It is suitable for pressures up to 150 psig. Steel valve bodies are available for pressures of 600 psig and higher.

Also available for use with unit are accessories including three-way valve, air gages, check valves, valve positioners, solenoid valves, booster relays.



SAVE EQUIPMENT and PRODUCTION COSTS on your smaller filling jobs

USE THE MODEL B



The Geyer Model "B" Semi-Automatic Filler is just right for your job when:
- you are handling semi-liquids or semi-solids
- your production runs are small and the cost of purchasing or operating a fully automatic filling machine is not justified

The Model "B" handles a variety of foods . . . In addition, this popular, versatile filling machine:
- fills up to 30 containers per minute, handles ½ oz. to gallons and offers bottom up filling for heavy products, clean cut-off filling for free-flowing products
- is accurate, simple to adjust, easy to clean, portable

Get full details. Let us bid on your job.

THE FILLER MACHINE CO., INC.
Philmont Club Station, Pa. Phone Chapel Hill 0990
New York Boston Chicago Dallas San Francisco

When inquiring check FP 3283 opposite last page

METZGAR LIVE ROLLER Conveyors

PACE-SET YOUR PRODUCTION SPEED

STANDARD WIDTHS 11½" — 15" — 18" — 24". LENGTHS TO SUIT REQUIREMENTS

Work can be held momentarily for adjustment or inspection without cutting main drive. May be used on slight incline or decline. An extremely versatile power conveyor when fitted to your needs.

BEST for
- Moving sharp-cornered and rough edged items
- Power unit in gravity line
- Production line work movement
- Handling heated and heat treated items

• WRITE FOR DETAILS •

• for LOWER COST HIGHER PRODUCTION •

METZGAR CONVEYOR CO.

461 Douglas St., N.W.

MFRS. OF WHEEL & ROLLER GRAVITY & LIVE ROLLER CONVEYORS • POWER BELT CONVEYORS • SWITCHES • ACCESSORIES & REEL DOLLIES

GRAND RAPIDS 4, MICH.

When inquiring check FP 3284 opposite last page

handwheel-operated hydraulic cylinders, pneumatic, and hydraulic-operated cylinders.

(Valve is a product of Red Jacket Co., Dept. FP, 510 Investment Bldg., Pittsburgh 22, Pa. . . . or for more information check FP 3285 on handy form opposite last page.)

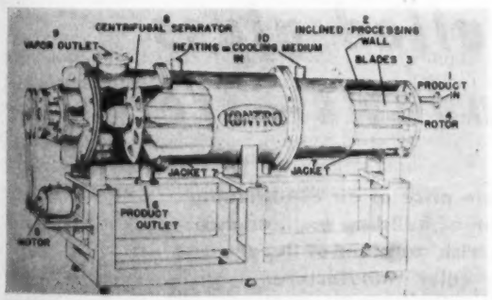
Continuous evaporator features adjustable film thickness

Automatically handles heat-sensitive or viscous products, under pressure or vacuum

Centrifugal processing unit features an adjustable rotor which can be moved in or out of chamber to vary film thickness or holding time. It can handle a large variety of operations — evaporating, distilling, deodorizing, and other heating or cooling operations. Unit is suitable for processing many heat-sensitive and/or viscous products, can be operated continuously under either pressure or vacuum.

Within the jacketed horizontal inclined-wall reaction chamber is a whirling bladed rotor. Film thickness is dependent upon clearance between blades and heating surface.

As product enters unit at narrow end it is thrown against the heated (or cooled) walls by the rotating blades. Concentrated material passes "down hill" towards outlet at wider end. Vapors travel concurrently through centrifugal separator section, where foam or entrainment is removed.



Centrifugal thin-film processing unit is well suited for operations involving heating or cooling, especially where products need to be processed quickly

Unit can be constructed of nearly any metal or alloy desired. Capacities range from 40 to 2800 lb/hr for various size units. Largest unit has transfer area of 80 sq ft, measures 13.8 ft by 5.3 ft dia.

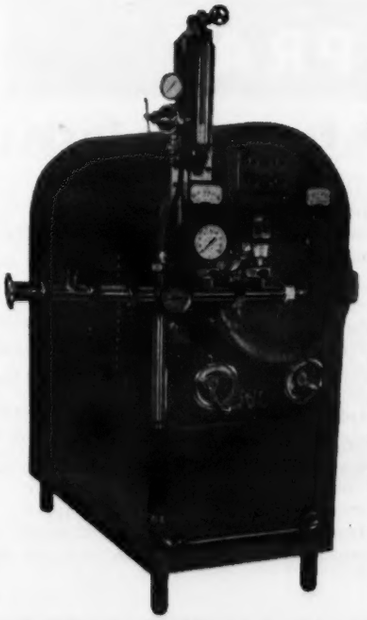
(Adjust-O-Film processing unit is product of The Kontro Company, Inc., affiliated with Artisan Metal Products, Inc., Dept. FP, North Main Street, Petersham, Massachusetts . . . or for more information check FP 3286 on handy form opposite last page.

Whipped Butter with Profit

by Continuous, Automatic Mixing !

Attractive profits are possible with continuous automatic mixing because you get better quality, a controlled, uniform overrun, and lower operating costs. The Oakes mixer produces a fine cell structure that makes for a better spreading, better tasting, better eating butter of a quality not otherwise obtainable. Straight line production can be had from storage to package.

A degree of mixing not possible with standard beaters or similar



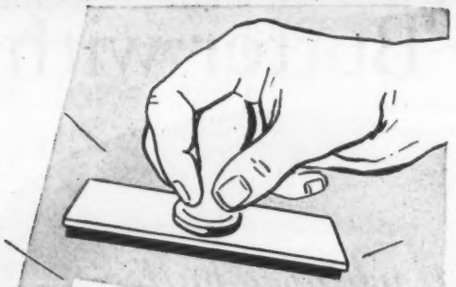
devices is attained. Air or inert gas is broken down into very fine cells evenly distributed throughout the product, as is essential for stability, quality, and velvet texture. The Oakes mixer further eliminates needless handling, and permits uniform packaging with constant overrun. Mechanical controls assure absolute uniformity and weight.

Here is a streamlined means of developing and maintaining consumer preference for whipped butter of profit-making quality!

The E. T. OAKES Corporation

Commack Road, Islip, Long Island, New York

When inquiring check FP 3287 opposite last page



New Safe Insect Control FOR FOOD PROCESSORS-HANDLERS

ACCEPTED AND APPROVED by U.S.D.A.

WHEN YOU BUY Niagara YOU BUY PROTECTION

Pyrenone*

*Reg. U. S. Pat. Off.

606 SPRAY

Kills on Contact!

All These Insects

Fruit Flies (Drosophila)
Common Flies
Grain Moths
Gnats—Roaches
Silverfish—Crickets
Spiders—Wasps
Ants—Mosquitoes
Cheese Skippers
Cheese Mites

Oil-Free, Non-Toxic

The U.S.D.A. has approved Niagara Pyrenone 606 Spray for insect control in food processing and food handling establishments.

This new formulation is an oil-free emulsifiable concentrate containing 60 per cent piperonyl butoxide and 6 per cent pyrethrum. *It is non-poisonous and non-injurious!* This is most important in view of the Miller Bill insecticide residue tolerances on food.

Pyrenone 606 is easy and economical to use. Just dilute with water and apply with ordinary spray equipment. For literature and prices see your supplier of Niagara agricultural chemicals, your Niagara field man or write us.

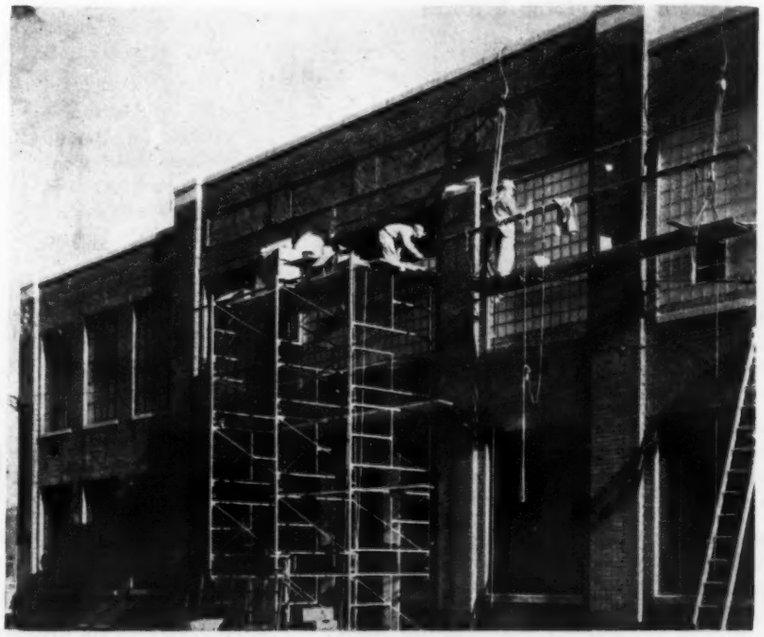
Niagara CHEMICAL DIVISION

FOOD MACHINERY AND CHEMICAL CORPORATION

Dept. 49-H, Middleport, New York

When inquiring check FP 3288 opposite last page

Existing sash being replaced with glass blocks in office and laboratory area of S. Twitchell Co., Camden, N. J. Two types of 8-inch blocks were incorporated in the panels. Glass blocks above eye level have interval prisms which direct the light upward where it is diffused from ceiling. Below eye level, light-diffusing blocks spread light in all directions.



we installed glass block windows—free

Savings in purchase price of air conditioning unit and reduction of building maintenance costs 'do the trick' at plant of flavor extract and color manufacturer

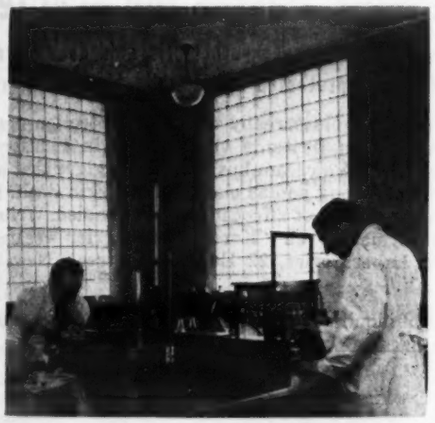
M. J. HESS, General Manager
S. Twitchell Company
as reported by FP staff

Discovering that the effect of an air conditioning unit, to be installed, would be greatly nullified by the old-type sash windows was, at first, a serious blow to the S. Twitchell Co. Further examination revealed that installation of $5000 worth of glass blocks could more than pay for itself with one year's savings effected by the change-over from old sash windows. Here's how it breaks down:

Because of less heat loss through glass block windows, the size of the air conditioning unit necessary to do the job could be reduced from a 20 ton to a 15 ton unit—a saving of $2800. These savings reduced the total cost of the glass blocks by as much as 60% (from $5000 to $2200).

Furthermore, replacing warped metal sashes and renewing plaster around windows which had disintegrated from moisture condensation was a major repair job long overdue. The estimate for repairs, only temporary as they would not change the conditions causing them, came to $2000. Thus, the actual cost of glass blocks would be down to $200.

Repairing broken window panes, many caused by the combination of small boys and stones, cost the Twitchell Co. as much as $1000/yr, and was not covered by insurance. New glass blocks are not only difficult to break, but are covered by the



Laboratory staff maintains careful quality control of Twitchell's flavor extracts and colors. An abundant quantity of controlled daylight is furnished by the glass blocks as well as giving a "new look"—both inside and out

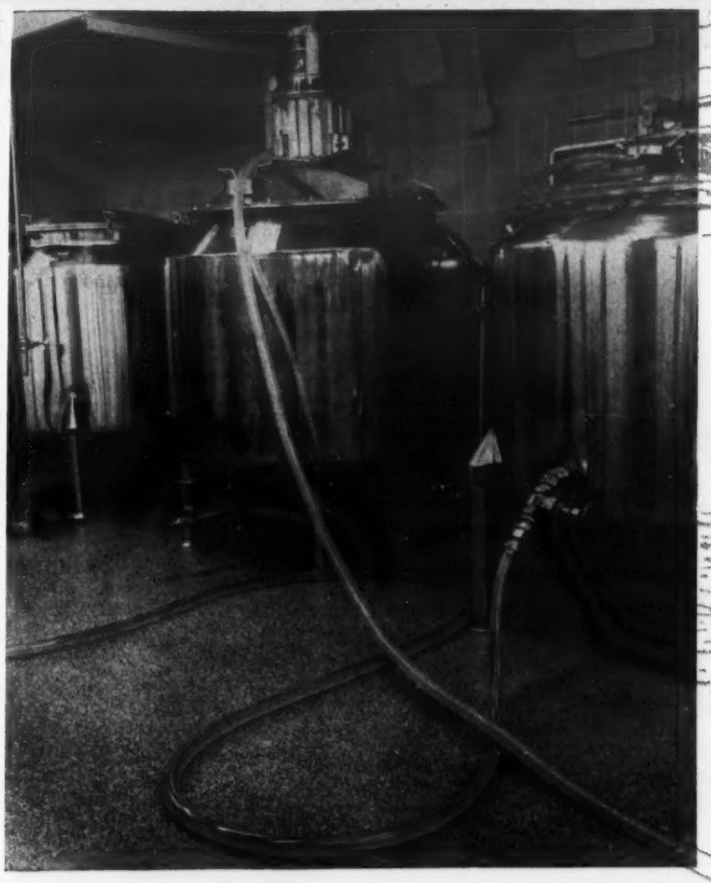
company's insurance policy. With this amount eliminated, the glass block actually saves $800.

Window washing costs $250. Cleaning and repairing venetian blinds was another expense item which the glass blocks solved. Figures now show savings of over $1000 in installation year alone.

Minor annoyances such as dirt and noise that prevailed in the building are no longer a problem. Improved light aids the research laboratory technicians at color matching work. In addition, it is expected that the fuel bill will be cut considerably this coming year. During the first month that the glass blocks were installed steam pressure was reduced from 7 pounds to 2 pounds. Employe efficiency has increased 15% with the healthier, lighter, and more attractive interiors.

(Glass blocks are a product of Pittsburgh Corning Corporation, Dept. FP, One Gateway Center, Pittsburgh 22, Pa. Check FP 3289 opp. last page.)

(Air conditioning unit is a product of The Carrier Corporation, Dept. FP, 300 So. Geddes St., Syracuse 1, N. Y. Check FP 3290 opp. last page.)



TRY THIS

flexible glass

For Safer FLUID FOOD TRANSMISSION

Tygon flexible plastic tubing well deserves to be called "the flexible glass." It is crystal clear for easy solution visibility. Flexible as a piece of string, it simplifies set-up and dismantling of lines. Tough, abrasion-resistant, and unbreakable, it can take the roughest kind of service. It doesn't chemically deteriorate with age; it cleans easily and thoroughly, can be steam sterilized if desired. It is endorsed and approved by medical authorities and manufacturers of food processing equipment for safe, pure handling of food products.

Yes, Tygon flexible plastic tubing is the clear solution to many fluid handling problems. It's available in bore sizes from 1/16th inch to 2 inches. And for high pressure use (250-300 psi) is available with an outer braid reinforcement of stainless steel.

PRODUCT OF U.S STONEWARE

Plastics and Synthetics Division

Write for Bulletin T-87 just off the press — 24 pages of technical data describing how and where you can use Tygon Tubing. U. S. Stoneware Co., Akron 9, Ohio, Plastics and Synthetics Division.

When inquiring check FP 3291 opposite last page

How processor takes the hard scrubbing out of cleaning

Clean-up men report Oakite Composition No. 67 saves effort—provides cleaner surfaces

At a large candy plant, as in all well-run food plants, cleanliness was strictly enforced. It meant continual, laborious scrubbing with brushes and cleaners to remove dirt, grease, drippings and sticky soils.

When asked for his advice, the Oakite Man suggested a trial of Oakite Composition No. 67. A few days' use told the story. Two typical applications illustrate the remarkable improvement. (1) After only a short soak in the Oakite cleaning solution, followed by a light brushing, pans were turned out cleaner than ever before. No longer did grease come to the top of the solution to contaminate cleaned surfaces; and no longer was hard scrubbing needed. (2) When applied to the tile floors, the Oakite solution proved equally effective. The man had only to apply the solution, let it soak, then mop it up.

Proving that—in industrial cleaning it pays to call on Oakite.

MANY WAYS OAKITE CAN HELP YOU

Oakite offers over 100 specialized materials, up-to-the-minute methods and equipment, and long experience—all of which make short work of cleaning and sanitation problems in food plants. More information in this booklet. Write Oakite Products, Inc., 27A Rector St., New York 6, N. Y.

SPECIALIZED INDUSTRIAL CLEANING

OAKITE

MATERIALS • METHODS • SERVICE

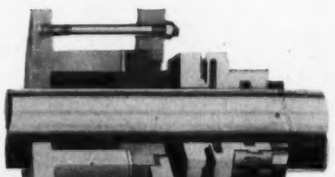
Technical Service Representatives in Principal Cities of U.S. & Canada

When inquiring check FP 3292 opposite last page

Resistance to food acids feature of mechanical shaft seal

Because of immunity to food acids and the Teflon bellows sealing component, which has zero water absorption and cannot harbor bacteria, new mechanical seal should find wide use in the food processing industry. Seal is said to provide a perfect fluid seal on pump or agitator shafts without high friction load on the shaft.

Unit consists of a stationary face secured to the stuffing box, and a rotary face which moves with the rest of the seal mechanism and is secured to the shaft. Leak-proof seal, between these ground faces, is accomplished by spring-loaded Teflon bellows. Back-up collar



Bellows on seal is made of Teflon

prevents seal from working out of the shaft. Design of bellow permits maximum operating conditions of 167°F and 100 psi (or 75 psi at 212°F). Sizes available from 7/8 in. to 2 1/8 in.

(Chemiseal mechanical seal is a product of United States Gasket Company, Dept. FP, 602 N. 10th St., Camden 1, N. J. . . . or for more information check FP 3293 on handy form opp. last page.)

NEXT MONTH

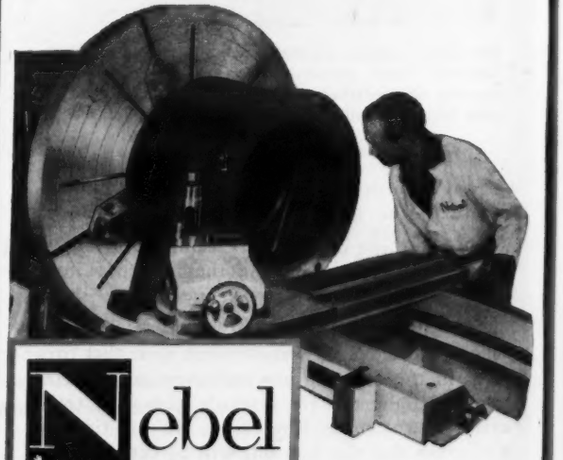
Centralized sanitation at Bell Brand Foods, Los Angeles, allows crews to hook into high-pressure steam-chemical line, hot water, or rinse water lines at any of 20 stations. Any area in big plant can be reached in matter of seconds, with no waiting on portable unit

"Kerodex" Passes the Acid Test

60 second test proves hydrochloric acid does not damage "Kerodex" protected hands while zinc disintegrates

"Kerodex" provides really effective protection against the many skin irritants encountered in industry. It spreads on like a cream but acts like a glove that is invisible yet strong and as elastic as the skin itself. Does not smear. Does not affect materials handled. Write for full information on "Kerodex"® barrier creams to Ayerst Laboratories, 22 East 40th Street, New York 16, N. Y. 5552

When inquiring check FP 3294 opposite last page



Nebel LATHES CINCINNATI

basic maintenance tool

Nebel extension bed gap lathes will turn all your maintenance jobs easily, quickly and inexpensively. The wide, deep gap accommodates outsize, odd-shaped parts . . . and with the gap closed, you can do all your engine lathe work as well. Why buy two lathes when one Nebel will do? See Nebel gap and engine lathes at the Machine Tool Show, Chicago, Sept. 6-17 . . . or write for free bulletins, sizes 16"-50".

Nebel Machine Tool Corp., Cinti 25, Ohio

When inquiring check FP 3295 opposite last page

Existing equipment can be coated or manufacturer can furnish new coated equipment

Coating provides durable easy-to-clean surface

Material is approved by Meat Inspection Bureau for use on process, handling equipment in federally inspected meat plants

Uses: As protective coating on handling trucks, process and mixing tanks, tables, scales, elevator doors, conveyors in all phases of food processing.

Features: Approved for use in federally inspected meat packing plants. Material provides hard, smooth finish which is easy to clean and corrosion resistant. Life expectancy of coated equipment — 5 to 10 yr.

Description: This thermosetting epon base coating is sprayed on equipment in multiple coats over a freshly sand-blasted surface. Each coating is set up with heat, and final coat is given oven cure at 500°F. Applications are made in manufacturer's plant.

(Lastiglas is product of The Bishopric Products Co., Inc., Dept. FP, 4413 Este Ave., Cincinnati 32, Ohio . . . or for more information check FP 3296 on handy form opposite last page.)

Tubing selection data summarized in handy eight-page guide

Pertinent information needed for selection of 46 principal analyses of tubing is condensed into eight page booklet. The 46 analyses are grouped into five classifications: (1) stainless steel; (2) carbon and alloy steels; (3) beryllium copper; (4) nickel and nickel alloys; and (5) titanium.

Guide #40 is issued by Superior Tube Co., Dept. FP, Norristown, Pa. When inquiring specify FP 3297 on handy form opposite last page.

All industry will be interested in this announcement that Marman Products Company, Inc., Los Angeles, is now a wholly owned subsidiary of Aeroquip Corporation, Jackson, Michigan.

Marman is known as the outstanding producer of band clamps, V-band couplings, channel band couplings, stainless steel straps, flexible fuel line couplings, and the new LIVE joint system. Aeroquip is the world's leading producer of flexible hose lines with detachable, reusable fittings for industrial and aircraft applications, and a major supplier of self-sealing couplings.

On many leading makes of industrial equipment, Marman products and Aeroquip products work side by side as important components. Manufacturers as well as users gain timesaving and moneysaving advantages.

As a subsidiary of Aeroquip, Marman is in excellent position to expand its industrial sales, service, and engineering facilities. Please write for complete information.

MARMAN PRODUCTS COMPANY, INC.

A SUBSIDIARY OF Aeroquip CORPORATION

11214 EXPOSITION BLVD., LOS ANGELES, CALIFORNIA

MARMAN PRODUCTS ARE MANUFACTURED UNDER VARIOUS U.S. AND FOREIGN PATENTS AND OTHER PATENTS PENDING

When inquiring check FP 3298 opposite last page

for Food Processing Advertisers*

The emblem at right is the mark of NBP—National Business Publications. You've probably seen it before on our contents page . . . rate card . . . or heading the FOOD PROCESSING listing in Standard Rate & Data. Because we're proud of it.

It signifies that FOOD PROCESSING has qualified for membership in the largest association of technical, scientific and professional journals in the United States. (We're proud, too, that our F. P. executive staff includes a past president of NBP and a member of its Board of Directors.)

But belonging to NBP is more than a feather in our publishing cap. It's an important *plus* for every advertiser in FOOD PROCESSING. Here are the membership requirements. Judge for yourself:

- **Unbiased editorial content**
- **Periodic reader interest evaluation**
- **Non acceptance of questionable advertising**
- **Periodic audit of circulation**
- **Uniform rates to all advertisers**

In addition, NBP provides the framework for a continuing exchange of ideas among member publishers. The result: continuing improvement in publishing practices to make FOOD PROCESSING more useful to its readers . . . more productive for its advertisers.

NBP

NBP

Food Processing

For men who manage the Food Processing Industries

Published by Putman Publishing Company

Creators of PUTMAN-STYLE Magazines
. . . terse, vital editorial; "hand-picked" circulation; square, high-visibility format; quality readership; hence more READER ACTION

BPA NBP

PUTMAN PUBLISHING

★ Courtesy of the publication MEDICAL ECONOMICS, creator of this copy, here adapted to FOOD PROCESSING

Metal laminated to plywood equals corrosion-proof structure

This lamination does not require painting, is vermin-proof, unaffected by moisture

Problem: Action of heat and moisture on dough, such as that experienced in a proof room, generates an acid vapor which is very corrosive. Conventional metal doors on the proof room at the Fink Baking Corp. of New York City had become corroded by this action. Doors were unsightly despite maintenance efforts to keep them well-appearing.

Solution: Fink Baking adopted a door which is a laminate—it has an aluminum facing bonded to both sides of a fir plywood core. Plywood is 1¼" thick and has 0.025" aluminum sheets bonded on both sides. Edges of doors are sealed off with 0.032" aluminum channels held in place by rivets.

Results: In use 2 years, doors no longer become corroded. Doors were installed at a cost which was 20% below the cost of materials previously used for the doors. Maintenance costs were also reduced. Immune to steam and other moisture, doors do not require painting, are vermin-proof, and can be washed down with a hose.

Mobile carrier with molded dough in tins is about to be rolled into proof room at Fink Baking Corp. Laminated doors of plywood and metal cost 20% less than doors previously used

Other applications: Used in construction of freezer boxes, railroad cars, and motor truck bodies, material can be faced with almost any metal. Aluminum, zinc-coated steel, or stainless steel are generally employed. Usual thickness of metal is 0.025" or about 24 gauge. Core material is generally ¼, ⅜, ½, or ¾" plywood. Other thicknesses and even other materials can be used.

(Construction material — Armorply, from which doors were made, is product of United States Plywood Corp., Dept. FP, Weldwood Bldg., 55 W. 44th St., New York 36, New York . . . or for more information check FP 3299 on handy form opposite last page.)

Cold line insulation molded around fittings by user

Bulk material packed on, can be removed and reused

On-the-job installation on cold line fittings is feature of cork-and-rubber composition insulation. Tacky, granulated material is furnished in bulk, can be molded around any fitting where cork can be used. User simply shapes it by hand to proper size.

Insulation is non-corrosive to ordinarily-used metals and can be held in stock for years without losing moldable characteristics. It can also be removed from fitting and reused with no efficiency loss.

Workman fills in voids as first step of insulating with moldable cork-rubber material

Necessity for stocking or cutting already-molded fitting covers is also eliminated.

(Plasticork is manufactured by Armstrong Cork Co., Building Materials Div., Dept. FP, 1010 Concord St., Lancaster, Pa. Check FP 3300 opposite last pg.)

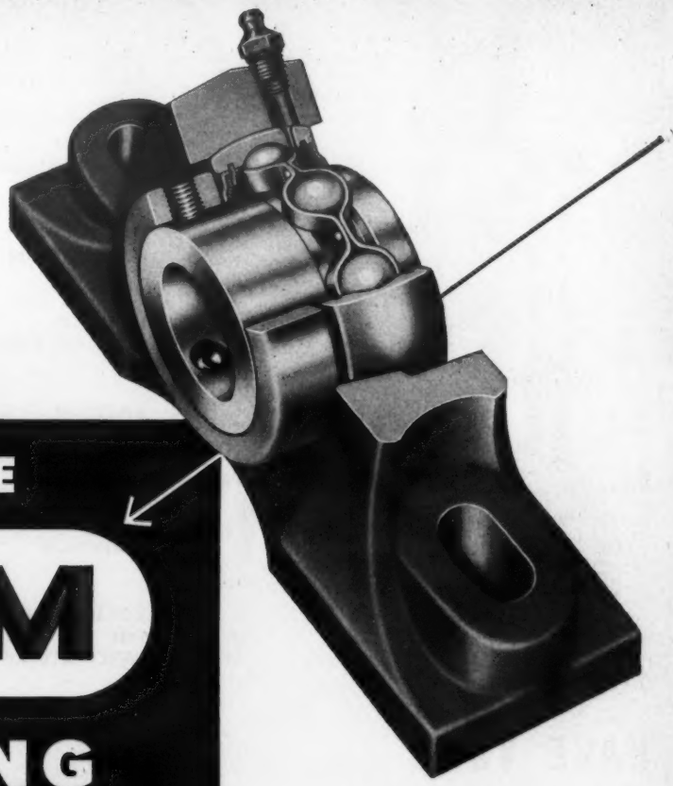
• "THAT'S INTERESTING"

(*Continued from page* 77)

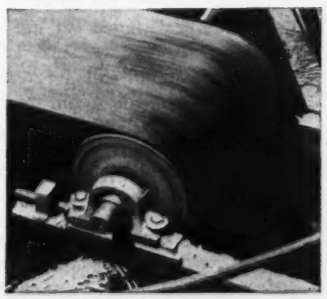
Foods are favorite theme for postage stamps

The use of postage stamps on mail began in England in 1840. Rulers and national heroes provided the first themes but many other subjects followed. Foods, and food animals, have been used frequently. Dairying seems to be a universal favorite, being chosen as a subject by 56 countries. The US, Colombia, El Salvador, and Uruguay are among those issuing stamps on which cows are shown. A chicken appears on a US stamp (1948) issued for the Centennial of the American Poultry Industries. Cacao is another favorite subject, and has been featured in various ways on the stamps of fourteen nations. Vanilla is just one of many flavorings pictured on stamps. National Dairy Council, in its publication *Food News*, circulated among school children, has developed a series of articles on stamps as one means of acquainting young people with some of the world-wide aspects of food production and nutrition.

(*Continued on page* 97)



A wonderful new Ball Bearing Pillow Block by Dodge . . . for *medium* duty!



More load-carrying capacity . . . larger shaft sizes . . . plus all the features and dependability of the famous S C Ball Bearing line! These are the qualities provided in Dodge S C M, a new line of mounted ball bearings, available in both pillow blocks and flange cartridge type.

Designed for medium duty, these new bearings are of heavier construction, with complete new housings. Metallic-backed Neoprene seals keep lubricant in, dust and dirt out of the bearing. Engineered to stay put, *the seal won't blow!*

S C M bearings are new members of the famous Dodge 30,000 hour line, all of which are sealed, both on and off the shaft. Fully assembled and pre-lubricated at the factory, they are ready to slip on the shaft. Available from Distributors' stocks in shaft sizes from 1-7/16" to 3-7/16".

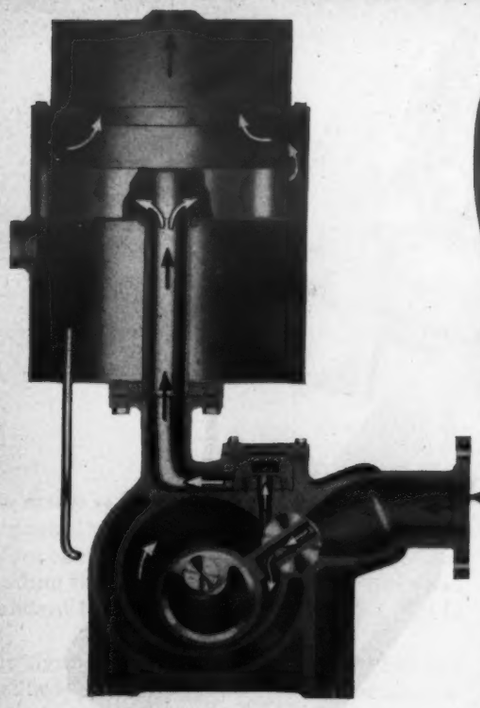
Write for bulletin with complete specifications.

DODGE MANUFACTURING CORPORATION
2400 UNION ST., MISHAWAKA, INDIANA

DODGE
of Mishawaka, Ind.

CALL THE TRANSMISSIONEER, your local Dodge Distributor. Factory trained by Dodge, he can give you valuable assistance on new, cost-saving methods. Look for his name under "Power Transmission Machinery" in your classified telephone directory, or write us.

When inquiring check FP 3301 opposite last page



VACUUM PACKAGING
VACUUM DEHYDRATION
VACUUM FUMIGATION
VACUUM CONCENTRATION
VACUUM FOR PACKAGE HOLDING
VACUUM RESEARCH
VACUUM FOR THE LABORATORY
VACUUM FREEZE-DRYING
VACUUM FILTRATION

HAVE YOU INVESTIGATED
VACUUM?

Vacuum by Kinney Pumps is a primary processing tool in the food industry. Many processes depend on Kinney Pumps to produce high vacuums (10 microns or better) at high speeds — for laboratory, pilot plant, and production work. Scores of other food processes requiring "soft vacuums" (25" to 29" Hg. abs.) profit by the wear-free, maintenance-free performance of these long lived pumps.

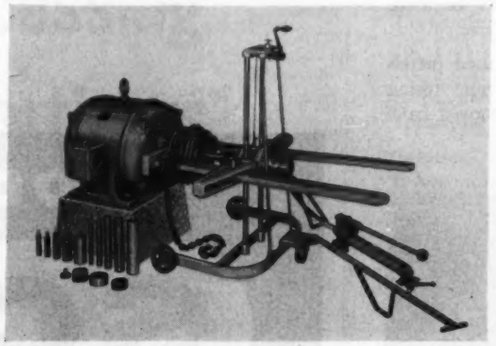
Whatever your vacuum requirement, Kinney has the pump to serve your needs. The Kinney line includes 13 single stage and compound models plus the new 1200 cu. ft. per min. Model KMB Mechanical Booster Pump. All models are available with gas ballast and other engineered systems for solving the water-vapor problem. District offices in Boston, New York, Philadelphia, Chicago, Cleveland, and Los Angeles are all competently staffed to discuss vacuum with you. For Bulletin V-54 write Kinney Manufacturing Division, The New York Air Brake Company, 3571 Washington Street, Boston 30, Massachusetts.

Kinney

When inquiring check FP 3302 opposite last page

Accessories add versatility, safety to pulley puller

Two new accessories are offered for company line of pulley pullers. First is chain attachment which holds puller arms rigidly in position when in use. Chain is easily attached, makes puller safer to use.



Pulley puller, showing accessories: chain and set of ten ram adaptors

Second is set of ten ram extensions, used for adapting hydraulic puller to various shaft sizes. Both accessories fit all pullers in company line.

(Pulley puller accessories are manufactured by Industrial Engineering Equipment Co., Dept. FP, 122-124 E. Fourth St., Davenport, Iowa . . . or for more information check FP 3303 on handy form opposite last page.)

Keeps stored grain insect-free for full season at 1c/bu

Liquid pyrenone protectant is non-toxic, non-flammable, oil-free

Insecticide is designed for use on all types of corn, barley, wheat, oats, rye, rice, and other small grains which are held in storage. When properly applied, material is effective for full storage season or approximately 8 months in controlling the exposed stages of granary weevils, rice weevils, confused flour beetles, lesser grain borers, saw-toothed grain beetles, and cadelle. It is non-toxic, non-flammable, oil-free.

Insecticide is an emulsion concentrate composed of 60.0% technical piperonyl butoxide, 6.0% pyrethrins, 34.0% inert ingredients. One part of concentrate is combined with 29 parts of water and applied at the rate of 4 gal of the diluted material for every 1000 bu of grain. Can be applied with simple sprayer or sprinkling can. Treatment costs are as low as 1c/bu. Change in moisture content of grain after treatment is less than 0.00053%.

(Grain-Gard is a product of Cornell Chemical & Equipment Co., Dept. FP, 224 N. Franklintown Rd., Baltimore 23, Md. Check FP 3304 opp. last page.)

For Faster and Better Clean-Up
USE
KLENZADE
DETERGENTS AND BACTERICIDES

CBS CLEANER
Exceptional emulsifying and saponifying powers scientifically balanced with rapid-action wetting agents for thoroughly removing stubborn fat and soil deposits. Ideal for hand cleaning of cookers, vats, filters, etc. Rinses clean and bright. Tops in its field.

KLENZADE HC-6
Highly popular general cleaner especially useful on all wood and metal surfaces, tile, concrete floors, general processing equipment, ovens, hoods, etc. Rapid removal and dispersion of grease and heavy soil. Leaves no scum; rinses freely. Safe for hands.

FLASH-KLENZ
Non-corrosive organic acid detergent for cleaning high temperature equipment. Completely neutralizes and removes baked-on mineral deposits. The latest scientific approach to lime or "stone" dissolution. Eliminates abrasive methods.

KLENZADE XY-12
Concentrated sodium hypochlorite solution for bactericidal use in food plant operations. Rapid and effective for sanitizing all types of equipment. Clear solution, always ready for use. No dissolving or settling necessary. Leaves no sediment or residual film.

SPECIAL DETERGENTS
and equipment for high temperature and heavy duty cleaning. Also fog sanitizing equipment and steam pressure cleaning.

Offices in Principal Cities
KLENZADE PRODUCTS, Inc.
BELOIT, WISCONSIN

When inquiring check FP 3305 opposite last page

Steam trap with 'dual fulcrum' handles fluctuating loads with maximum efficiency

Design of steam trap allows for high discharge flow rates when required, yet permits efficient handling of very low condensate loads. Key to this performance is "dual fulcrum" which powers valve lever: a primary high leverage fulcrum for cracking valve from seat, and a secondary low leverage fulcrum to open valve wide for unrestricted flow.

Internal working parts are of heavy stainless steel. Bucket is also stainless, deep drawn with no seams or joints. Trap contains no removable pins. Pressures up to 2500 psi and temperatures to 1100°F can be handled.

(Hydro-Flex steam traps are manufactured by the Strong, Carlisle & Hammond Co., Dept. FP, 1392 W. Third St., Cleveland 13, Ohio . . . or check FP 3306 opposite last page.)

Odors removed, airborne microbes inhibited by ozone generator

Portable unit effectively destroys odors and inhibits airborne molds and bacteria by producing ozone, a strong oxidizing agent. The ozone is produced by an electrical discharge from grid within the unit. Generators are made in two sizes: the Bluebird for rooms up to 1500 cu ft, Falcon for rooms to 15,000 cu ft.

(Air-O-Fresh ozone generators are manufactured by Melco Products Inc., Dept. FP, 305 5th Ave. S., Minneapolis, Minnesota . . . or for more information check FP 3307 on handy form opposite last pg.)

Forms waterproof elastic coating over all types of insulation

Combining Neoprene and silicone, new insulation adhesive and coating material provides moisture-resistant cover which protects insulation from abrasion or puncture, and insures high thermal efficiency and low maintenance costs.

Material is available in two grades—one for use where vapor breather is required and another which serves as a vapor barrier. Coating is nontoxic and non-inflammable, and is highly resistant to acids, alkalis, salt brines, chlorine, and most solvents. Material is unaffected by bacteria and molds and has necessary elasticity to contract and expand with temperature changes. Vapor breather compound can be applied by spraying, brushing, or sponging; other coating with brush or trowel.

(Insulation coating, Lagz, is product of West Chester Chemical Co., Dept. FP, Box 39, West Chester, Pa. Check FP 3308 opposite last page.)

STURTEVANT *Dry-Batch* BLENDER

Provides Quick, Thorough Mixing of Materials . . . Cuts Production Costs

Compare These Advantages

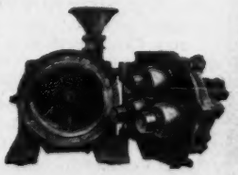
- Only one lever controls both receiving and discharging for simplicity of operation. Hand wheel operates rack and pinion slide at feed opening.
- 4-way mixing action speeds production . . . assures thorough blends.
- "Open-door" accessibility permits easy, fast, thorough cleaning.
- Single aperture drum for both intake and discharge.
- Unusually efficient scoops pick up materials to effect thorough mixing as drum revolves.
- 9 models . . . a size for every job . . . from 10 cu. ft. to 900 cu. ft. batches.

Sturtevant Dry-Batch Mixers are available in standard models with capacities from 500 to 20,000 lbs. Special models with higher capacities are also available. Write for information or engineering assistance.

Sturtevant Mill Company
122 Clayton Street, Boston 22, Mass.
DESIGNERS & MANUFACTURERS OF
CRUSHERS • GRINDERS • SEPARATORS • CONVEYORS
MECHANICAL DENS AND EXCAVATORS • ELEVATORS • MIXERS

Other Sturtevant Equipment for Increasing Production

MICRONIZER® GRINDING MACHINE
A fluid jet grinding machine, the Sturtevant Micronizer speeds reduction of materials to low micron sizes. These jet mills are especially applicable in fields where a particle size in microns is desired. Available for outright sale.



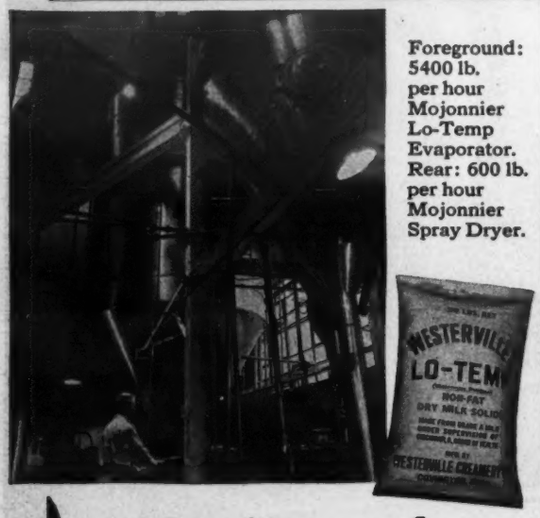
RING-ROLL MILLS
For medium and fine reduction (10 to 200 mesh), hard or soft materials. Very durable, small power. Operated in closed circuit with Screen or Air Separator. Open door accessibility. Many sizes. No scrapers, plows, pushers, or shields.

AIR SEPARATOR
For separation of fines to 325 mesh and finer. Increases output from 25% to 300% . . . lowers power costs by 50%. Capacities ¼ to 50 tons per hour output.

SWING-SLEDGE MILLS
For coarse and medium reduction (down to 20 mesh). Open door accessibility. Soft, moderately hard, tough or fibrous substances. Built in several types and many sizes.

When inquiring check FP 3309 opposite last page

NEW PROFITABLE PRODUCT FOR THE DAIRY INDUSTRY!



Foreground: 5400 lb. per hour Mojonnier Lo-Temp Evaporator. Rear: 600 lb. per hour Mojonnier Spray Dryer.

premium grade nonfat dry milk with the

Mojonnier LO-TEMP PROCESS

With their Mojonnier Lo-Temp process in steady production, Chattanooga Area Milk Producers Ass'n., Chattanooga, Tenn., Townley Dairy Co., Oklahoma City, Okla., and Westerville Creamery Co., Covington, Ohio, have been commercially producing *premium quality nonfat dry milk*. In a series of comparative tests conducted at the Dairy Technology Dept. of Ohio State University, cottage cheese made from Lo-Temp nonfat dry milk was judged equal in yield, texture, flavor, and moisture retaining properties to cottage cheese made from the best quality fresh pasteurized skim milk.

In proved Lo-Temp NFDM, Mojonnier *Technigeering* has opened new avenues for dairy profit in the production of beverage milk, cottage cheese, buttermilk, chocolate milk, fortifying fresh skim, half and half, coffee cream and other products.

Yield analysis, test data and fully descriptive literature will be sent promptly on request. Write:

MOJONNIER BROS. CO.
4601 W. Ohio St., Chicago 44, Illinois

QUALITY Mojonnier YOU CAN TRUST

LO-TEMP PROCESS
Another achievement in Mojonnier Technigeering

When inquiring check FP 3310 opposite last page

NEW LITERATURE

Reviews of books and industrial bulletins describing equipment, supplies, services

Extensive data on food, agriculture compiled in 1039-page handbook

Beginning with discussions of soils and plant growth, comprehensive book carries on through processing to final packaging of food products. Experts in individual fields contribute to the 26 chapters, covering virtually every phase of processing.

Chapter headings include soil microbiology, fertilizers, insecticides and weedicides, growth regulants, enzymes, essential nutrients, and storage of raw products. These are followed by discussions of individual commodities, such as cereals, dairy products. Further chapters cover food engineering, packaging, and disposal of wastes.

Extensive treatment is given to chemicals in foods, and to the Food, Drug, & Cosmetic Act. The appendix is of special interest, as it contains listings of important Food & Drug regulations, government food agencies, and private research groups. Also included are various nutrition tables, and an extensive guide to the food field literature.

"Handbook of Food and Agriculture", edited by F. C. Blanck, can be obtained by remitting $12.50 direct to Reinhold Publishing Corp., 430 Park Ave., New York 22, N.Y.

1955 replacement pages for sugar manual now available

1955 revision of Hawaiian Sugar Planters' Association "Sugar Manual" is now available in form of replacement pages for last year's binder. New edition features a glossary and addition of more data and statistics.

Sugar Manual, 1955 Revision, can be obtained from the Hawaiian Sugar Planters' Association, Dept. FP, 723 Investment Bldg., Washington 5, D.C. When inquiring specify FP 3311 on handy form opposite last page.

Gov't drafts suggested sanitary poultry ordinance for local, state adoption

A model code of sanitary practices in poultry processing plants has been published by the U.S. Public Health Service. Intended as a guide for local adoption of such an ordinance, code was drafted in hope of gaining greater uniformity throughout the country for those products which do not cross state lines.

Copies of the ordinance can be obtained from the Institute of American Poultry Industries, Dept. FP, 221 N. LaSalle St., Chicago 1, Ill.

Dictionary-type listings featured in 1132-page dairy reference manual

Comprehensive reference book on dairying is arranged like dictionary—all subjects are listed alphabetically, with numerous cross-references. Book is published in England, with contributions of over 60 experts in its 1132 pages. Extensive treatment is given to major subjects, supplemented by many photos, drawings, and literature references.

"Dictionary of Dairying", 2nd Edition, can be obtained by remitting $10.00 direct to Interscience Publishers, Inc., Dept. FP, 250 Fifth Ave., New York 1, N.Y.

Aeration treatment of kraut wastes shows promise in lab studies

Laboratory studies conducted by National Canners Association indicate that kraut wastes can probably be successfully treated by aeration. Average detention time of only four hours is indicated, although mechanical features and operating economy of large scale treatment are yet to be worked out.

Copies of Research Report No. 1-55, "Treatment of Cannery Wastes by Aeration IV 1954 Laboratory Studies on Kraut Wastes" can be obtained from Washington Research Laboratories, National Canners Association, Dept. FP, 1133 20th St., N.W., Washington 6, D.C.

Refrigeration parts, operation, described with detail cutaways

Centrifugal refrigeration machines are taken apart and described in detail in well-illustrated, 36-page booklet. Many cutaway diagrams aid explanation. Flow sheets for various installa-

tions, table of characteristics for common refrigerants are also included, as well as capacity chart and dimensions of refrigeration units.

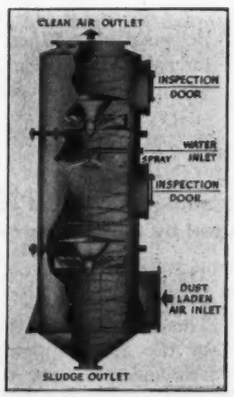
Bulletin AIA No. 30-F-22, "Centrifugal Refrigerating Machines", can be obtained from Carrier Corp., Dept. FP, 300 S. Geddes St., Syracuse 1, N.Y. When inquiring specify FP 3312 on handy form opposite last page.

Demonstrates stereomicroscopy with 3-D anaglyphs

Demonstrating the use of 3-D microscopes, 38-page booklet in two colors features three photographs which can be observed through viewer that produces a 3-D depth affect. Ten-question model-selector card is included for determining proper stereomicroscope for specific work. Among suggested advantages of the instrument is reduction of operator training for high precision work.

Catalog D-15 is issued by Bausch & Lomb Optical Co., Dept. FP, 635 St. Paul St., Rochester 2, N. Y. When inquiring specify FP 3313 on handy form opposite last page.

Three-stage process feature of centrifugal air washer



Illustrated four-page bulletin describes centrifugal air washers for wet dust collection. Units are available in capacities from 500 to 40,000 cu ft/min. Drawings illustrate eleven typical applications.

Entering the lower collector chamber tangentially, dust-laden air, fumes, or gases are put in centrifugal motion, mixing freely with descending wash liquid. Air stream is in accelerated centrifugal motion, in second stage, as it contacts washing liquid in the center spray chamber. In the third stage any wash liquid still entrained in the rising air-stream is expelled. Vanes can be arranged in various combinations to solve many dust control and product recovery problems.

Bulletin No. W-555 can be obtained from The Ducon Co., Dept. FP, 147 E. 2nd St., Mineola, N.Y. When inquiring specify FP 3314 on handy form opposite last page.

When shoppers compare your products with other brands...

do they see THIS → or THIS →

...CELITE FILTRATION provides perfect clarity... assures appetizing appeal

In today's highly competitive market, it is vitally important that processed food products *look* good as well as *taste* good. For in a shopper's eye clarity is often a measure of purity. That's why so many processors are turning to Celite* diatomite filtration.

By means of a filter cake hundreds of times finer than the finest wire mesh, Celite polishes liquids to a dazzling clarity. And it does it economically, too. Celite is low in cost. It provides practically automatic operation with any standard pressure filter. And you needn't worry about a clarification bottleneck. Celite works at fastest flow rates.

Thousands of processors are using Celite today for filtering sugar, beer, fruit juices and jellies, cooking and salad oils and many other products. Why not ask one of them about Celite. Better still, get the complete story from Johns-Manville.

*Celite is Johns-Manville's registered trade mark for its diatomaceous silica products

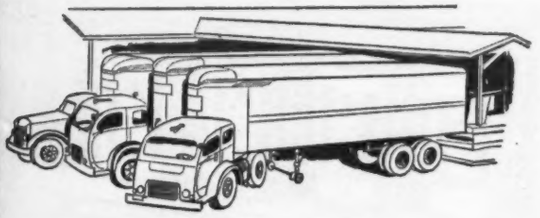
When you filter your product with Celite you get the extra sales appeal of sparkling clarity.

Tell us what you make. We'll tell you if and how Celite can help you make it better. Write to Johns-Manville, Box 60, New York 16, N. Y. In Canada, Port Credit, Ontario.

JM PRODUCTS Johns-Manville CELITE FILTER AIDS

When inquiring check FP 3315 opposite last page

Roy Fruehauf, President, Fruehauf Trailer Company



"Business Publications Are Vitally Important To Me..."

says Mr. Fruehauf. "Frequently I find facts and ideas in business publications that help me to make important decisions. We know our customers and prospective customers read *their* business magazines, too. We carry substantial advertising schedules in several different groups of business periodicals."

It is good thinking to judge an advertising medium by the value its editorial pages deliver to regular readers. Business publications provide a direct sales route for any product or service of benefit to business or professional men.

NBP

NATIONAL BUSINESS PUBLICATIONS, INC. *1001 Fifteenth Street, N. W., Washington 5, D. C. • STerling 3-7535*

The national association of publishers of 171 technical, professional, scientific, industrial, merchandising and marketing magazines, having a combined circulation of 4,049,550... audited by either the Audit Bureau of Circulations or Business Publications Audit of Circulation, Inc.... serving and promoting the Business Press of America... bringing thousands of pages of specialized know-how and advertising to the men who make decisions in the businesses, industries, sciences and professions... pin-pointing your audience in the market of your choice. Write for list of NBP publications and the latest "Here's How" booklet, "How Well Will We Have to Sell Tomorrow?" by Ralston B. Reid, Advertising & Sales Promotion Manager, Apparatus Sales Division, General Electric Company, Schenectady, N.Y.

new literature

Abstracts of MIT theses present new orange juice radiation, freeze-dehydration studies

Collection of abstracts of MIT doctorate theses for academic year 1952-53 includes five papers from the school's food technology department. Included are papers on treating orange juice with high-voltage cathode rays and microwave radiations; freeze-dehydration of heat-sensitive foods; development of objective methods for quality evaluation of capsicum products.

"Abstracts of Theses Accepted in 1952-53", 276 pages, paperbound, can be obtained by remitting $2.50 direct to Office of Publications, Massachusetts Institute of Technology, Dept. FP, Cambridge 39, Mass.

Fumigants, insecticides, deodorizers sprayed by portable or fixed units

A complete selection of sprayers for in-plant pest control and related purposes is described in a four-page bulletin. One sprayer is a bottle type (one qt size) having a capacity range up to 17 quarts per hour. Another unit, designed for fixed installation, has an extensive spray range — enough to treat a dairy barn. In addition, there is a portable jet sprayer with a variety of orifice tips that may be used with tank—either knapsack type or larger capacity.

Sanitation sprayer Bulletin 76 is issued by Spraying Systems Co., Dept. FP, 3213 Randolph St., Bellwood, Ill. When inquiring about manufacturer's product, reader may simply check FP 3316 which is located opposite last page.)

5 million new steel containers used by food industry in '54

The food industry required 5 million new steel shipping containers in its operations last year. This is reported in the 1955 directory, published by the Steel Shipping Container Institute. Developments of new coatings and linings are expanding the already extensive list of materials and products that can be shipped economically and safely in steel containers. The directory covers this subject as well as container specifications and a brief history of the industry. Names and addresses of all members are listed, while various products each manufactures are indicated on a series of charts. A map shows locations of plants throughout the US.

Directory is issued by the Steel Shipping Container Institute, Inc., Dept. FP, 600 Fifth Ave., New York 20, N. Y.

Retractable polyethylene spout closure for steel pail containers

Brochures describe features of retractable polyethylene spouts for steel pails. Spouts fit 2-3/8" holes, come already assembled, ready to be crimped on hole (with special tool also supplied by company). Opening is quickly and easily done with any pointed tool. Plastic spout which is pulled out is both convenient and sanitary.

Manufacturer's tests indicate that closure seal will withstand pressures greater than pail itself. Brochure includes listing of pail makers who use the plastic spouts.

Brochures on "FlexSpout" closures are issued by Rieke Metal Products Corp., Dept. FP, Auburn, Indiana. Specify FP 3317 opp. last pg.

Continuous pipe line hot water heaters may be used singly or in series

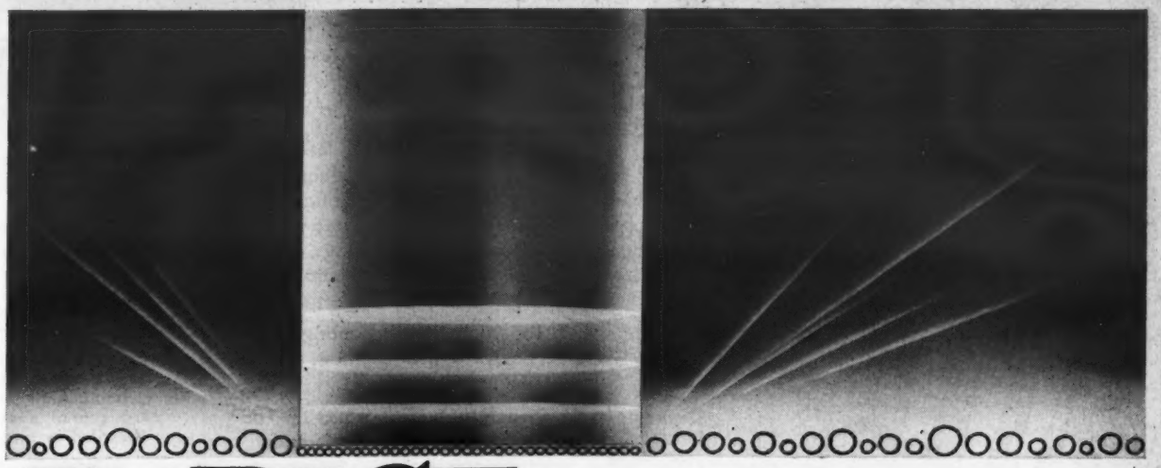
Continuous jet pipe line water heaters are described in 20-page bulletin. Designed for direct connection to water or steam lines they will produce a water temperature rise up to 100° F with water at 100 psig and steam at 100 psig. After mixing of liquid and steam, hot liquid is discharged into tank or through a piping system. Where applications call for greater temperature rise than 100° F two heaters may be used in series.

Bulletin 3A on steam jet heaters is issued by Schutte and Koerting Co., Dept. FP, Cornwell Heights, Bucks County, Pa. When inquiring specify FP 3318 opposite last page.

Tells how to adapt filled bags to fit specific pallets

Step-by-step directions for handling filled multiwall bags so that they will fit a given pallet are offered in a 10-page mimeographed bulletin. Basic rules that govern such handling are listed and prescribed methods of placing on pallets in 2, 3, 4, 5, and 6 bags per tier arrangement are described. Drawing is included in each instance to indicate initial and additional tier positions. Layouts for rail car and van loading are also described and illustrated. Tabulation of filled bag sizes and corresponding pallet sizes provides a quick check on requirements and how to meet them.

"Palletizing Filled Multiwall Bags" is issued by Arkell & Smiths, Packaging Div., Dept. FP, 1000 Mill St., Canajoharie, N. Y, When inquiring specify FP 3319 opposite last page.



IMPACT Improves Products—Cuts Processing Costs in a Gaulin Homogenizer

Today, a Gaulin Homogenizer has many important uses besides making stable emulsions and dispersions. By forcing products at tremendous velocity through a microscopic orifice, a Gaulin shears, expands, and smashes agglomerates down to their ultimate particle size.

Breaks them uniformly finer . . . mixes them evenly . . . to provide a host of important advantages.

Basically, the uniformly finer particle size a Gaulin provides, accents the dominant characteristics of a product. For example, it will *stop* separation. *Improve* texture, flow, lubricity. *Accent* taste, scent, color. *Speed* chemical reactions, or dispersion of ingredients. And *reduce* the amount of costly ingredients needed.

How about your product?

We'll be glad to show you just how a Gaulin can improve your product — and work with you toward solving any specific problems you may have. Write today for more information.

MANTON-GAULIN MFG. CO., INC., 59 Garden Street, Everett 49, Mass.

Some Typical Products Improved by Gaulin Homogenizers

FRUIT JUICES AND CONCENTRATES
Eliminates separation, increases flavor by complete dispersion of pulp and flavor cells.

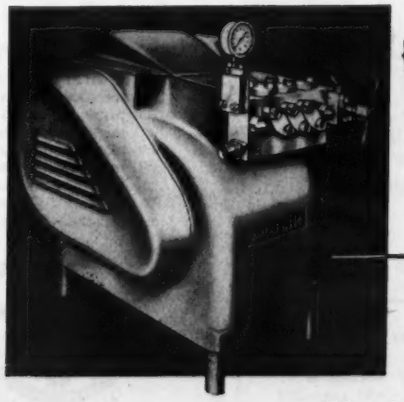
TOMATO PRODUCTS
Provides better dispersion, stops separation, improves flavor.

CHOCOLATE SYRUPS AND CHOCOLATE
Eliminates separation. Gives smoother texture, glossier appearance. Improves flavor and drape characteristics.

TOPPINGS
Looks better, tastes better, whips faster, won't separate or bleed.

ESSENTIAL OIL EMULSIONS
Increases surface area to provide maximum flavor, scent, color. Makes them uniform and stable.

LIQUID STARCH
Improves transparency, clarity, and stops separation, at lower cost than other methods.



GAULIN PILOT PLANT HOMOGENIZER
Ideal for experimental purposes, operation or process requiring up to 25 gallons per hour capacity. Handles quantities as small as one pint. Available on low rental basis.

GAULIN TWO-STAGE COLLOID MILL
Stator is jacketed for cooling or heating. Gap setting adjustable for .001" to .045". Only 45 seconds clean-up required in changing colors. 12" head room. 12" x 17" floor area.

Gaulin

HOMOGENIZERS

WORLD'S LARGEST MANUFACTURER OF HOMOGENIZERS, TRIPLEX STAINLESS-STEEL HIGH PRESSURE PUMPS, AND COLLOID MILLS

When inquiring check FP 3320 opposite last page

BIN STUCK LATELY?

CLEVELAND
VIBRATOR
Don't mister. A hammer is the old-fashioned and costly way to do it. Use a CLEVELAND AIR OR ELECTRIC VIBRATOR instead. It's much cheaper.

Literature on request.

THE CLEVELAND VIBRATOR COMPANY

2818 Clinton Ave. • Cleveland 13, Ohio

When inquiring check FP 3321 opposite last page

new literature

Light projection proportioned upward 35% — downward 65%

Catalog section describes an industrial fluorescent fixture which transmits about 35% of the light up; 65% down. It points out that in addition to proper proportioning of light direction, ceilings, walls, and other surfaces in working areas should be of light color with high reflectancy.

While designed for continuous mounting, unit may be installed singly. It uses pre-heat, Rapid Start, or Slimline fluorescent lamps.

Brochure on 35:65 lighting unit is issued by The F. W. Wakefield Brass Co., Dept. FP, Vermilion, Ohio. When inquiring specify FP 3322 opposite last page.

Bulletin has full-color cutaway views of vertical solid shaft motors

Features of these vertical motors include asbestos-protected windings, normalized castings, deeply-recessed air openings for weather protection, transverse lubrication, removable canopy, and others. Illustrated 8-page bulletin describes various motors from ¼ to 400 hp, using numerous diagrams.

Booklet No. 1868 can be obtained from U.S. Electrical Motors, Inc., Dept. FP, Box 2058, Los Angeles 54, Calif. When inquiring specify FP 3323 opposite last page.

How 3 meat processors cut costs using conveyors, caster-equipped units

File of three field reports contains facts on how conveyors and caster-equipped units cut costs. Each deals with a different problem and each concerns a company producing or handling meats. Operations include moving meat from coolers to delivery trucks; moving meats from slicing to wrapping and weighing; in-plant trucking where caster failure had been a problem because of corrosive action of wash water.

File of three field reports is issued by The Rapids-Standard Co., Dept. FP, 342 Rapistan Bldg., 130 Trowbridge St. NW, Grand Rapids 2, Mich. When inquiring specify FP 3324 opposite last page.

The Convention and Exhibit Schedule will be found on page 7 of this issue

SPARKLER FILTERS

SPARKLER horizontal plate FILTERS

HORIZONTAL PLATE

100% Sanitary For Food Products

Made in all stainless steel—valves and piping—with all surfaces completely cleanable to conform with sanitary requirements in the food field.

Are the plates in the filter you are now using as accessible for complete cleaning inside and out as the Sparkler horizontal plate shown here?

With most other types of filter plates the inner surfaces are inaccessible and cannot be cleaned; contaminating particles are locked in and the first run of a new batch frequently must be discarded or rerun through the filter.

With Sparkler sanitary plates, a pure product is obtained right from the start and continues pure with fine sharp filtration up to the end of the filtering cycle.

The patented Sparkler scavenger plate acts as an auxiliary filter with independent control valve filtering each batch down to almost the "last drop," leaving practically no unfiltered holdover in the bottom of the tank.

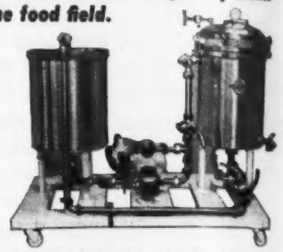
Available in capacities up to 10,000 G.P.H.

Write Mr. Eric Anderson for personal service

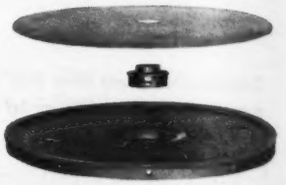
SPARKLER MANUFACTURING CO., Mundelein, Ill.

Sparkler International Ltd. Plants at Galt, Ontario, Canada and Amsterdam, Holland

Service representatives in principal cities

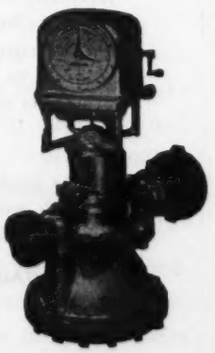


All stainless steel horizontal plate filter with stainless steel piping, valves, and slurry tank.



Sparkler plates can be completely disassembled for sanitary cleaning.

When inquiring check FP 3325 opposite last page



COMPLETE Jacketed Pipe and Fluidometer Systems

for all liquid-handling problems

● In any processing operation where the maintenance of a uniform temperature in the process pipes is necessary, a Hetherington & Berner jacketed system will assure dependable, economical production. This is equally true regardless of whether the material being handled requires a hot or cold temperature, what heating or cooling medium is used, or whether the material is corrosive or non-corrosive. Write for Bulletin J-50. If you have a liquid batching problem, involving either light or heavy liquids, jacketed or unjacketed construction, investigate the *Fluidometer System.* This system gives accurate, dependable and *completely automatic* batching and is adaptable to practically any liquid measuring problem, whether it involves gallons, barrels or tank cars. Write for Bulletin Fl-49.

H&B ESTABLISHED 1869

HETHERINGTON & BERNER INC.

757 KENTUCKY AVE. INDIANAPOLIS 7, IND.

When inquiring check FP 3326 opposite last page

discussed in this issue

PROCESSES, EQUIPMENT, and MATERIALS

Use this handy directory when you want information on a specific type of process, equipment, or material mentioned in the processing stories or the advertisements in this magazine. Everything discussed in this issue is given here, if you want more data you can write manufacturer direct . . . or turn to last page and use the handy "Information Request Slip." This is a special service provided by the publisher . . . no obligation or charge, of course. The publisher contacts the proper manufacturers for you—information comes to you direct.

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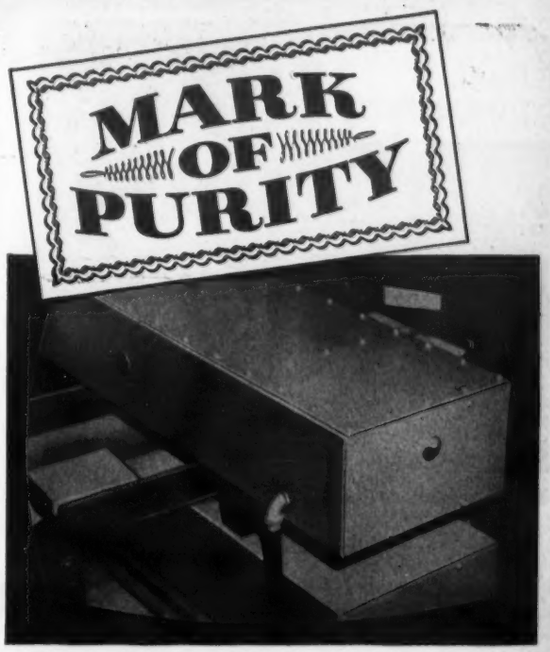

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Please send me information on the RCA Electronic Metal Detector for food applications.

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Have you wondered why this magazine comes to you ...without charge?

MAYBE, LIKE MANY others, you've always thought that all publishers make their money, or much of it, from the subscriptions they sell.

'Tisn't so . . .

. . . no, 'tisn't so. With the exception of a few general magazines (e.g. READER'S DIGEST*) that sell hundreds of thousands—some millions of copies—most industrial publishers with relatively small circulations actually lose money on their subscription sales.

Then how do industrial publishers make money? As you can guess, they make it from the advertising they sell. *Total subscription sales are hardly a "drop in the bucket" compared to advertising revenue.*

Advertisers demand best coverage

Since advertisers pay the bills, they demand best possible coverage of all important men in the field. So it's up to the publisher to publish the most readable magazine possible . . . then to insure coverage of the maximum number of the best readers.

You can't do that by selling subscriptions—sales costs are high—a large share of the subscribers cancel each year—and no matter how much time, money, and pressure is used there are always some of the important men who will never buy.

As you can see, the most effective method of getting the kind of coverage advertisers want is (a) to hand-pick the most important men; (b) send the magazine to ALL these men; and (c) to make the magazine so interesting, so valuable that they will want to read it.

That's why . . .

. . . Food Processing is sent only to qualified readers . . . selected management and technical key-men in the food industry; that's why you get Food Processing at no cost—that's why we spend thousands of dollars on each issue to make it worth your time to read it. For you are an important reader in the food processing field.

*Reader's Digest has since announced that they will accept advertising, beginning with their April, 1935 issue.

Food Processing

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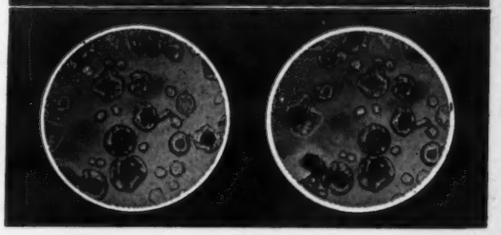
POLVAROMAS

the PERFECT ANSWER to POWDERED FLAVORS



As illustrated in the above photomicrographs, Polvaromas are made through a special P & S process whereby a drop of flavor is entirely surrounded by a protective coating of edible, non-toxic vegetable material. With Polvaromas the flavor is not dried on the surface of a powder, but is locked within. This is proof of your gaining optimum flavor stability.

Here at last is the perfect flavor solution for all food products which are based on a dry composition.

Polvaromas are available in all popular flavors. We shall be happy to submit samples and further technical information for your approval.

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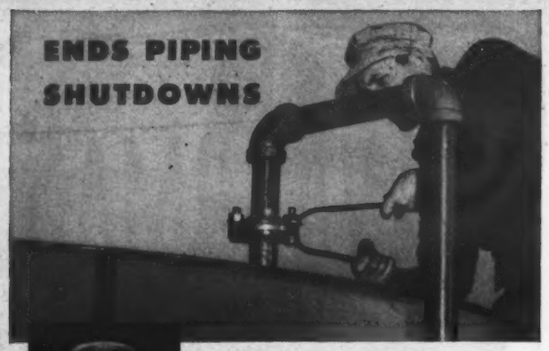

This PVC piping—with injection molded fittings—lasts and lasts

At this plant, unplasticized PVC piping handles sulfuric, nitric, muriatic, phosphoric, and acetic acids. Pressures range to 100 psi. This PVC piping, using Tube Turns Plastics' injection molded PVC fittings, has been in service for months, shows no signs of deterioration. Yet the metal and alloy metal piping it replaced failed at 3 to 12 months intervals from corrosive action. Cut your maintenance—eliminate shutdowns and hazards. Write for free booklet describing properties of unplasticized PVC fittings and flanges. Tube Turns Plastics, Inc., Dept. PD-8, 224 East Broadway, Louisville 1, Kentucky.

TUBE TURNS PLASTICS, INC.
224 East Broadway • Louisville 1, Kentucky
Call your **TUBE TURNS PLASTICS'** *Distributor*

When inquiring check FP 3329 opposite last page

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TEST IT ON TRIAL OFFER

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Repair broken factory floors without the usual traffic tie-up. Simply shovel INSTANT-USE into hole or rut — tamp smooth — truck over! No waiting! INSTANT-USE bonds tight to old concrete — right up to a feather edge. It's tough. Wears like iron. Won't crack or crumble. Install complete overlay where floors are badly chewed up. Used indoors or out. Immediate shipment.

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Please send me complete INSTANT-USE information, details of TRIAL ORDER PLAN and Free INSTANT-USE BROCHURE—no obligation. (Clip and attach Coupon to Co. letterhead).

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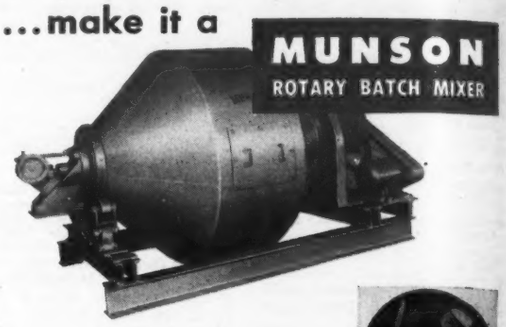

Unequalled for dry mixing of cereals, tea, coffee, flour, starches, gelatins, etc. Available in capacities from 20 to 250 cu. ft. Drum interior can be vinyl coated to provide non-toxic, abrasive-resistant lining on all parts in contact with mixture. Provides faster, more accurate blending, yet will not grind or reduce size of particles. Can be fitted with internal spray for introduction of limited amount of liquid.

EXCLUSIVE MULTIPLE-BLENDING ACTION

Lifters cut out and lift ingredients. Rotating cone tumbles stock. Empties *completely* after every mix.

Write for Details

MUNSON MILL MACHINERY CO.
Dept. FP-855, Utica, New York

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What's A "New Solution"?

It's an article in FOOD PROCESSING describing a new way of solving a tough plant operating problem. In each issue you will find specific "case histories" showing how these processing problems were solved. Each article states the operating problem . . . explains the process used and gives details of how problem was solved . . . shows results secured.

Take a look at "New Solutions" articles in this issue — they might suggest a "solution" for some of your tough processing problems.

ccurate
redients

NSON
BATCH MIXER

EXCLUSIVE
MULTIPLE-BLENDING
ACTION

Lifters cut out and lift ingredients. Rotating cone tumbles stock. Empties *completely* after every mix.

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PROCESSING

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City _____ Zone No. _____ State _____

*"substantial operations" does not necessarily mean an extremely large plant. But requests for the magazine exceed supply so we must set standards to insure publication being sent where it can be used to best advantage.

Just mail this request to

READER SERVICE DEPT., FOOD PROCESSING
111 East Delaware Place, Chicago 11, Illinois

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☐	3282	Gearmotors
☐	3283	Semi-automatic Filler
☐	3284	Live-roller Conveyors
☐	3285	Control Valve for Slurries
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August 1955

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Company _____ Main Product _____

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"THAT'S INTERESTING"

(*Continued from page* 85)

Omar Khayyam — with revisions?

Convenience of food and drink packaged in cans might prompt a modern Omar Khayyám to revise the famous line which refers to "a jug of wine, a loaf of bread, and thou."

Advantages of wine in cans is emphasized in the new product of Yosemite Winery Assn., Madera, Calif. Features

include: compactness (one-third less storage space than bottles); lightweight (one-third less weight than bottles); unbreakability; driplessness.

Carina Kan-O-Wine comes in a 12.8-oz, wax-lined, cap-top cans and in five types: Port, Tokay, Sherry, Muscatel, and White Port.

It was 45,000,000 lb all right — but it wasn't ghee!

In these columns in June FOOD PROCESSING an article concerning export of butter stated that the US had "sent abroad, mostly to Pakistan, 45,000,000 lb of butter in the form of ghee". These shipments (during the last six months of 1954) were in the form of butter oil — not ghee. The two are not to be confused. Ghee results from the removal of moisture from butter by a boiling process. It is comparatively free from moisture, is light in color, and has a granular consistency as a result of slow cooling. It contains over 99% fat. No ghee has been shipped from the US to export markets.

Demand for ghee in consuming countries exceeds supply. USDA has been working with the dairy industry in investigating the market for ghee.

Steak a la Paul Revere

In rural areas long, long ago, riders placed beef steak under saddles while riding to make the meat more tender. (American Meat Institute).

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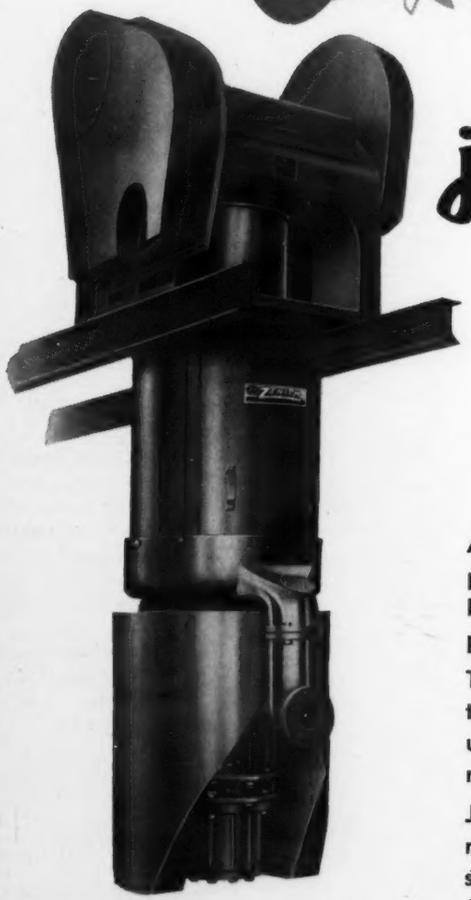

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